

NETWORK MODELLING FRAMEWORK

TOC Operating Costs

Background Documentation

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Contents	Page
1. OVERVIEW	1
Purpose of the model	1
Components of the model	2
Structure of Technical Note	2
2. INFRASTRUCTURE COST MODEL	5
Introduction	5
NMF reporting	5
3. OPERATING COST CATEGORIES AND FUNCTIONALITY IN TOCM	7
Cost Line Categories Modelled in NMF	7
Assumed Drivers of Operating Costs	8
Costs varying with the volume of train service provided	11
Costs varying with the extent of the network served	15
Other costs	16
4. PREPARATION OF INPUTS TO THE TOCM AND INTRODUCTION TO THE OPERATING COST INPUT SPREADSHEETS (OCIS)	21
Introduction	21
Structure of OCIS Suite	21
NMF1 Cost Module Inputs 1 File	22
NMF1 Cost Module Inputs 2	23
Output Parameters for TOCM - (NMF Cost Module Inputs v1.x[date])	30
5. POPULATION OF OPERATING COST INPUT SPREADSHEETS (OCIS)	31
Introduction	31
Cost Inputs to OCIS	32
Non-cost Inputs to OCIS	35
Cost Line Categories Modelled in NMF, but supplanted by ICM	1

FIGURES

Figure 5.1 OCIS structure	31
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TABLES

Table 3.1 Operating Cost Categories Modelled in NMF	7
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Table 3.2	Summary Of Drivers of TOC Operating Costs	10
Table 3.3	Example calculation of peak unit hours	12
Table 4.1	OCIS suite	22
Table 5.1	TOC codes used within the OCIS	35

APPENDICES

A COST ITEMS SUPPLANTED BY ICM

B SOURCE OF OPERATING COST DATA USED IN NMF V1.0

C NMF OPERATING COST PARAMETERS OUTPUT BY OCIS

1. OVERVIEW

- 1.1 This document outlines the purpose, structure and usage of the TOC operating cost module within the Network Modelling Framework (NMF). It is intended to permit readers to understand which aspects of costs are modelled, the components of the model and how they work (at an outline level), and what actions are required to use the model to generate meaningful results.
- 1.2 All data contained in the model are commercially confidential.
- 1.3 NMF functionality was expanded in v1.1 to include Network Rail's Infrastructure Cost Model (ICM), with ICM cost data subsequently supplanting some cost items previously calculated from this operating cost model. This report continues to provide a comprehensive description of the full NMF TOC operating cost model, but clearly delineates the data that is taken from this model and that from the ICM.
- 1.4 Appendix A provides information on those items now obtained from the ICM, but which are still calculated by the operating cost module. However, the description and application of the Operating Cost Input Spreadsheets (OCIS) model (see paragraphs 1.14 et al below and Sections 4 and 5), used to populate the NMF operating cost module, and continues to reflect all cost items. This is because the OCIS model is based on capturing the entire cost base of the TOCs and calculating appropriate cost rates. The model has not been reconfigured to reflect non-ICM items only.
- 1.5 In v1.2, functionality was further expanded to allow TOC costs reference data to be editable. The process for doing this is set out in the NMF User Guide (currently for NMF v1.3).

Purpose of the model

- 1.6 The purpose of the operating cost sub-module is to allow the NMF to calculate high level forecasts of TOC Operating Costs associated with various scenarios for the High Level Output Statement and for other NMF testable scenarios. For a given set of assumptions about future train services (defined by the user via the timetable input into the NMF), the model will generate the operating costs associated with those assumptions.
- 1.7 The operating cost model is based on historical TOC costs and the associated physical drivers (such as train hours operated, etc.), from which suitable unit costs are derived. Future costs are then driven off the forecasts for the relevant physical drivers, and assumptions about the likely changes to real unit costs (e.g. through salary escalation). The user is also able to reflect assumptions about the efficiency of resource utilisation for selected cost items through the application of "efficiency factors", as well as by changing the assumptions on, for example, average earnings growth. The method of doing this could be found in the User Guide v1.3 section 8.2.
- 1.8 In its current form, the model does not permit changes to the underlying assumed drivers of cost growth (i.e. what is fixed, what driven by train hours, etc.), nor is it able to work with new TOCs.

1.9 New functionality provided in v1.2 enables all data tables relating to rolling stock unit costs to be editable (the User Guide sets out how this is undertaken). This includes the ability to:

- Add new stock/formation types and provide the user the ability to edit unit costs;
- Assign existing stock/formations to TOCs not currently operating these units;
- Editing of all rolling stock related unit costs; and,
- A simple copy/paste facility so that unit costs from one stock/TOC combination can be copied to provide initial values.

Components of the model

1.10 The TOC Operating Cost module consists of two major elements – a suite of Operating Cost Input Spreadsheets (OCIS) which feed into the TOC Operating Cost Module (TOCM) of the NMF which calculates operating costs using an Oracle database.

NMF Operating Cost Module

1.11 The TOCM is a module integrated within the NMF. In addition to the TOC cost tables imported from OCIS, which sit within the core NMF database, the TOCM also uses data (for example train miles and peak unit hours by stock type) from the user specified timetables for individual tests.

1.12 The TOCM produces forecasts of operating costs TOC cost, disaggregated by TOC and cost item (or aggregated at industry level) which are presented in the Financials and Physicals reporting pack, and feed into the appraisal reporting.

1.13 The categories of costs which are modelled by the NMF are described in Section 3 of this technical note, as are the drivers of changes in these costs.

Operating Cost Input Spreadsheets

1.14 The OCIS is a suite of standalone spreadsheets, built in Excel, which accept inputs of actual or estimated operating costs and associated “physical” data (such as staff numbers, train hours, etc.) from a variety of industry sources, as well as using timetable-related data from the NMF for the timetable consistent (as far as possible) with the actual operating cost data used as an input to the model.

1.15 The data inputs to OCIS are cleaned, manipulated and combined within the model, in order to generate appropriate estimates of unit costs. OCIS produces a set of standardised tables which (once separated into a transfer data set), can be loaded into the TOCM within the main NMF suite of programmes.

Structure of Technical Note

1.16 Section 2 summarises the presentation of TOC operating costs in NMF v1.1 and subsequent versions, and how these differ from v1.01 and before.

1.17 Section 3 describes the operating cost functionality of the TOCM, including the categories of operating costs that are modelled in the NMF and the drivers of each

category of operating cost. Whilst this chapter provides information on the source of some categories of costs, a complete record is presented in Appendix B.

- 1.18 Section 4 describes the structure of the OCIS model and provides a starting point for a user wishing to update the NMF input data (should updated or more detailed information become available), and as a source of background information for users analysing NMF forecasts or wishing to understand the source of data used in the model.
- 1.19 Section 5 provides guidance on how a user could populate the OCIS. The information only allows the user to update OCIS, the information would then need to be fed through to the actual operating cost module in NMF (TOCM) by NMF User Support.

2. INFRASTRUCTURE COST MODEL

Introduction

- 2.1 The Infrastructure Cost Model (ICM) is a strategic model that produces long term forecasts of Network Rail engineering activity, expenditure and network outputs for given levels of network usage and capability. A version of this model will underpin NR Business Plans and Periodic Review cost submissions. The current version in NMF is ICM v.1. In future versions it will support the structure of charges review process.
- 2.2 The ICM has been integrated into NMF v1.1 to provide consistency in infrastructure related costs and how such costs will change with changes to network usage. On that basis, cost data from ICM replaces several cost line items previously calculated by the NMF TOC operating cost model (although the functionality remains within NMF should it be required in the future).
- 2.3 As the ICM is a 3rd party model, no detailed information on its functionality is contained within any NMF documentation.

NMF reporting

- 2.4 The inclusion of ICM has revised the reporting of TOC operating costs within the NMF standard outputs. The following line items are removed from the 'TOCOpex' sheet in the Financial and Physicals outputs:
- Capacity Charge [£]
 - EC4T [£]
 - Fixed Track Access Charges (FTAC) [£]
 - Station and Depot LTC MJR [£]
 - Station and Depot LTC SFO [£]
 - Station and Depot LTC TOC [£]
 - SUP Charge [£]
 - Variable Track Access Charges (VTAC)
- 2.5 These are replaced by a single line item of 'Net Revenue Requirement'. This amount represents the sum of the charges levied on the TOCs and the direct grant paid from Central Government to Network Rail. Overall, the total shown will be some £2-3bn higher than that from v1.01.

3. OPERATING COST CATEGORIES AND FUNCTIONALITY IN TOCM

3.1 This chapter describes the categories of operating costs that are included in the NMF, and what the NMF assumes the drivers of operating costs are. In general the categories of operating costs that have been included are defined as those which account for the majority of TOC costs, and for which source data was available for a reasonable number of TOCs.

Cost Line Categories Modelled in NMF

3.2 Table 3.1 lists the cost line items individually modelled in the NMF operating cost sub-module, all of which are calculated (and reported) at industry, sector and TOC level. In addition, some (as noted in the table) are calculated by stock type and TOC.

TABLE 3.1 OPERATING COST CATEGORIES MODELLED IN NMF

Staff	Rolling Stock	Network Rail costs	Station costs	Other
<i>Physicals</i>				
Number of On-train staff (by stock type)	Train and Unit miles (by stock type)			
Number of Station staff	Train and Unit hours (by stock type)			
Number of "other" staff	Peak Unit hours (by stock type)			
	Seat Miles (by stock type)			
<i>Financials</i>				
On-train staff salaries	Capital lease costs (by stock type)		Station maintenance	Other Costs
Station Staff salaries	Non-capital lease costs (by stock type)			Diesel (by stock type)
Other staff salaries	Maintenance costs (by stock type)			Commission TOC
Redundancy costs				Commission Other
				Performance DfT
				Performance NR

3.3 "Other costs" often accounts for a high proportion of TOC operating costs, sometimes up to 25% of total operating costs. This is consistent with experience from previous

studies where these costs cover a multitude of items, including overheads, professional (e.g. Legal and accountancy fees), station maintenance (for SFO stations) and car park management costs.

3.4 Whilst the intention was to model a consistent set of operating costs for each TOC, delays in the provision of data and the inconsistency of categories of operating cost reporting by individual TOCs meant that this could not be achieved. Efforts to achieve consistency were focussed on those cost categories which would have a material impact on operating cost forecasts. The user will therefore notice in the financials and physicals reports from each test that cost information reports for TOCs is not consistent, particularly for commission, station LTC, performance, capacity charge and supplementary charges.

3.5 Care should be taken when interpreting some of the cost line items, as it was necessary to complete the calculation and reporting functionality of the TOCM before source data was finalised. This affects two categories in particular:

- Staff salaries: Whilst the intention had been to model employers' pensions and NI contributions separately, insufficient TOCs were able to provide this information in a consistent manner to enable the basic salaries and overheads to be separately modelled. Therefore "staff salaries" include employers NI and pensions contributions.
- Station Long Term Charges: For many TOCs cost data for LTC was not split by the type of station (major stations, station facility operators or secondary stations). In these instances the costs are reported according to the line items provided by the TOC. Since the NMF functionality assumes that LTC are fixed, the inability to split LTC accurately will not affect operating costs forecasts.

Assumed Drivers of Operating Costs

Introduction

3.6 In practice TOC operating costs are driven by a wide range of factors, for example:

- the level of train service provided and the types of trains used to operate the service;
- the quality of train service and customer service provided; and
- factors that are often external to the TOC but which drive changes in cost rates (for example real wage inflation and the cost of oil).

3.7 Other costs are largely fixed, for example fixed track access costs and HQ staff costs.

3.8 Whilst a franchisee may choose to vary the spending on items traditionally classed as "other costs", for example advertising, spending on professional support (consultants such as accountants and lawyers) and the leasing and utilities for HQ buildings, simplified assumptions need to be made about how these costs may change over time.

3.9 One further issue to consider is the escapability of costs. For example, whilst a train service may change such that rolling stock or staff are no longer needed, it is likely that the TOC will not escape leasing costs until the end of the lease, and would have to pay redundancy costs to staff.

- 3.10 It is recognised that the factors that affect operating costs are complex, often involving non-linear relationships and step-changes in costs. However the NMF is a strategic model and therefore costs have generally been assumed to be driven by one of three factors:
- Costs that vary with the volume of train service provided;
 - Costs that vary with the extent of the rail network served; and
 - Costs that remain broadly fixed.
- 3.11 Since the changes in operating costs are specified in this way, when analysing changes in operating costs (which are provided by TOC and line item in the “TOC cost” sheet of the Financial and Physicals file) it is sensible to also output diagnostics such as the total train miles and hours (from the “Physicals” sheet of the Financial and Physicals file) and also the timetable diagnostics information from the NMF diagnostics menu (which provided train hours and miles information by TOC and stock type and formation).
- 3.12 This chapter considers each operating cost line item in the NMF, highlights some of the issues that were considered when specifying the model functionality and describes what drives changes in the costs.
- 3.13 Table 3.2 summarises the drivers of operating costs, for quick reference.

TABLE 3.2 SUMMARY OF DRIVERS OF TOC OPERATING COSTS

NMF Operating Cost Item	Primary Driver	Secondary Driver	Tertiary Driver
On-train staff salaries	Train hours by stock type		AEI
Station staff salaries	Efficiency assumption		AEI
Other staff salaries	30% fixed , 70% vary by on-train staff	Efficiency assumption	AEI
Redundancy	Change in staff numbers	Staff retention rate	% of annual salary paid as redundancy
Capital Lease costs	Change in peak unit hours by stock type		Fixed in nominal terms
Non-capital lease costs	Change in peak unit hours by stock type		RPI
Maintenance costs	Change in unit miles by stock type	Efficiency assumption	AEI
Station maintenance (SFO stations)	Fixed	Efficiency assumption	RPI
Other costs	30% fixed, 40% vary with train hours, 30% vary with on-train and station staff	Efficiency assumption	RPI
Diesel	Change in unit miles by stock type	Efficiency assumption (to reflect oil prices)	Fixed in nominal terms
Commission	Fixed		RPI
Performance	Fixed		RPI

Costs varying with the volume of train service provided

Key issues considered

- 3.14 Prior to specifying the functionality for the operating cost sub-module of the NMF, the different approaches that could be used to forecast costs were considered:
- Whether modelling an average train cost by TOC would be appropriate. This idea was rejected as costs may vary widely between train services within a TOC (Scotrail loco-hauled sleepers vs. 1-car DMUs, Greater Anglia loco-hauled services vs. 1-car DMUs);
 - Whether it would be appropriate to model an average train cost by service group (or even service code). However again this idea was rejected as costs may vary widely between train services operating by a TOC on a route (4-car EMU vs. 12-car EMU) or within a service group and hence;
 - It was therefore confirmed that despite the strategic nature of the model, costs would need to reflect the type of rolling stock and the number of units (or vehicles) used for each train; and
 - Furthermore, it was concluded that to enable (for example) 3 x 8-car trains and 2 x 12-car trains of the same fleet to be identified as requiring the same assets from the same fleet, all trains of the same stock operated by the same TOC would need to be modelled together.
- 3.15 The model allows new rolling stock to be introduced, allowing both entirely new stock to be added and existing stock to be transferred between TOCs (since stock is allocated to a specific TOC for operating cost purposes); see section 8.3 of the v1.3 User Guide for more information. (In the timetable editor it is possible to code a train as being formed of any class of rolling stock that currently operates on the network (although care must be taken not to code electric trains to operate on non-electrified routes); however, costs will not be able to be calculated unless that class and subdivision of train is currently operated by that TOC.)

Rolling Stock: Total Lease Capital Costs

- 3.16 Rolling stock operating costs each year are calculated as the percentage change in peak units hours for each stock type.
- 3.17 Implicitly this means that:
- Changes in lease costs are proportional to the number of units of each class of rolling stock required to operate the peak timetable; and
 - Rolling stock lease capital costs per vehicle leased are assumed to be fixed in nominal terms.
- 3.18 A further element of operating cost functionality is that the model assumes that if more vehicles are leased than are required to operate the service, the lease costs of surplus vehicles will not be escaped until the year that the lease expires.

Calculation of Peak Unit Hours

- 3.19 Peak unit hours are defined as the hours operated by each type and formation of rolling stock at all locations on the network, during the period 0700-0900. Table 3.3

shows an example of how they are calculated, and the percentage change in peak unit hours (and therefore rolling stock leasing costs to operate the service) arising from a re-timing of a train.

3.20 It should be noted that in the calculation of peak unit hours the origin and destination are any point on the network, what is important is that the train is operating on the network between the hours of 07:00 and 09:00.

TABLE 3.3 EXAMPLE CALCULATION OF PEAK UNIT HOURS

Timetable A			Timetable B		
Origin departure time	Destination arrival time	Peak minutes	Origin departure time	Destination arrival time	Peak minutes
06:30	07:10	10	06:30	07:10	10
07:00	07:40	40	07:00	07:40	40
07:30	08:10	40	07:30	08:10	40
08:00	08:40	40	08:00	08:40	40
08:30	09:10	30	08:30	09:10	30
09:00	09:40	0	08:50	09:30	10
Total Peak minutes		160			170
Percentage change in peak unit hours					6%

Additional User Advice

3.21 Four further points are helpful to remember when specifying tests or interpreting results, these concern;

- The level of accuracy with which stock volume requirements are calculated;
- An assumed infinite availability of rolling stock by a TOC;
- The implicit variation in capital lease costs by stock type and the approach to analysing model outputs; and
- Apparent changes in lease costs during periods when the timetable has not changed.

3.22 These points are explained in detail below.

3.23 The model does not calculate the number of diagrams operated or the number of units or sets leased. This is because in practice, there is no simple relationship between peak unit-hours, diagrams, fleet requirements/ size that could be implemented in a strategic model. Should the user need to know the numbers of vehicles leased it is necessary to refer to the OCIS and the forecast change in peak unit hours for each stock type from the NMF results, and calculate fleet size manually.

3.24 The model assumes that a TOC has an unconstrained supply of vehicles of each of the types of rolling stock that it operated in 2005/6. It does not flag when more units are operated than the TOC leases, it simply assumes that the as many units are available as are required to operate the service, and that the costs of leasing and maintaining these

are the same as the core fleet. It is therefore recommended that the user takes note of the number of peak unit hours by stock type in each test compared to the December 05 timetable unit hours (using the “Custom Report With Drill Down” option in the financials and physicals report – assuming that 2006 has been specified as the December 2005 timetable (check in the “Details” sheet of the financial and physicals report)).

- 3.25 When interrogating the results of a test it is likely that, at TOC level, the percentage change in capital lease costs will not match the change in peak unit hours. This will be because a timetable is usually operated by a range of stock types each having a different lease cost per vehicle. It is therefore recommended that the user compare changes in peak unit hours and capital lease costs by stock type (using the “Custom Report with Drill Down” option in the financials and physicals report) to confirm that the model is forecasting as expected.
- 3.26 If one implements a timetable change in 2010 which involves a reduction in peak train hours (and therefore requires less rolling stock) and this timetable remains in force for the rest of the forecast period, one might expect to see no change in capital lease costs after 2010 (when looking in the “TOCOpex” sheet of the Financials and Physicals reporting pack). However, the user needs to remember that lease costs are only escaped at the end of the lease term for that type of rolling stock, which may not be until a number of years after the timetable has been implemented.

Rolling stock: Total Non-capital Lease costs

- 3.27 Rolling stock non-capital lease costs are calculated as the percentage change in peak units hours for each stock type, i.e. changes in lease costs are proportional to the number of units of each class of rolling stock required to operate the peak timetable.
- 3.28 Rolling stock lease non-capital costs are assumed to be indexed at RPI from 2004/5 levels until the end of the lease.
- 3.29 As with capital lease costs, if more vehicles are leased than are required to operate the service, the non-capital lease costs of surplus vehicles will not be escaped until the year that the lease expires.

Additional User Advice

- 3.30 Whilst all TOCs incur capital lease costs, the fleet of some TOCs (for example c2c) does not incur non-capital lease costs (the fleet is on a dry lease) but instead all maintenance is paid for via maintenance costs. In such instances the user will see that the non-capital lease costs in the model for that TOC are zero.
- 3.31 Information provided in the section on capital lease costs regarding the TOC’s availability of stock remains true for non-capital lease costs. However the advice on interpreting results is especially important for non-capital lease costs as sometimes a TOC will operate a fleet of stock where some stock is on a wet lease (incurring non-capital costs) whereas other stock is on a dry lease (incurring only maintenance costs). Should a timetable use a lower proportion of stock that is on a wet lease (or even cease to use such stock completely), the non-capital lease costs as reported at TOC level will show an unexpectedly high change, which cannot be explained until results are

analysed by stock type (it may sometimes also be helpful to return to the OCIS data to understand the characteristics of each stock type).

Rolling stock: Total Maintenance Costs

3.32 Rolling stock maintenance costs per unit-mile and stock type have been derived from data prepared for the Network Economics Model (NEM, a DfT-owned rail modelling framework, developed prior to the NMF) and are assumed to be:

- Proportional to total annual unit-miles for each stock type;
- Indexed with AEI; and
- Subject to a user specified efficiency trend which can reflect falling costs (relative to AEI) over time.

Diesel fuel costs

3.33 Diesel fuel costs are driven by changes in unit miles by stock type. Diesel costs per unit mile cannot be changed to reflect changes in consumption rates for individual rolling stock types, however like EC4T costs, the user can reflect changes in the price of oil (and therefore the impact on diesel costs) by editing the Diesel efficiency factor in the NMF (see Section 8.3 of the User Guide).

3.34 Since the cost information provided for the NMF only identified total diesel costs (not split by stock type and with consistent unit/train miles) it was necessary to calculate a base cost per unit-mile derived from data prepared for NEM. These consumption rates were not based on detailed information from TOCs but are approximate rates estimated for similar types of rolling stock.

On-train Staff Salaries (Costs)

3.35 The on-train staff category includes both drivers and other on-train staff. Changes in on-train staff costs are driven by changes in train hours by stock type and AEI. They can also be adjusted according to a user specified efficiency factor which is intended to proxy effects such as the introduction of Driver Only Operation, changes in RPI or customer care staff, or general productivity improvements through better rostering techniques.

3.36 Numbers of on-train staff are calculated by multiplying train hours by the number of train staff per hour, interrogating this information (which is provided in the outputs sheets from the OCIS), the user will note that the number of on-train staff per train varies by stock type, using a simplified assumption that the higher the number of seats on the train, the higher the number of on-train staff.

3.37 The method of calculating the number of on-train staff per train hour by stock type was calculated as follows:

- The total observed number of drivers for each TOC was spread pro rata with train hours by each stock type and formation, assuming one driver per train.
- Other on-train staff numbers are spread pro rata to (equivalent standard) seat hours to each stock type, assuming a constant number of other on-train staff per equivalent standard seat hour across all units operated by a TOC. An 'equivalent standard seat hours' measure is used which assumes a 2:1 weighting first to

standard seats to account for higher staffing requirements for first class seating.

- 3.38 On-train staff costs are then calculated by multiplying the number of on-train staff by the average on-train staff salary by TOC (salaries vary by TOC in accordance with implied salaries provided in the source data). The user can find this salary information (which includes employers' pensions and NI contributions) recorded in the "KPI" sheet of the financial and physicals report (where they are specified as "On-train staff cost/staff number").

Costs varying with the extent of the network served

Key issues

- 3.39 This section deals with costs which are not driven in simple ways by operational drivers and vary in complex ways with the geography of the network and the exact way in which it is used. Many of these costs are regulated and both the quantum of cost and its distribution between TOCs may depend on future regulatory decisions which are not modelled in NMF.

Station Maintenance

Definition

- 3.40 Station maintenance is undertaken by the TOC which is the SFO (station facility operator) of that station, and a proportion of this cost is then charged to the other TOCs that serve the station (for which the station is a "secondary station"). The SFO will identify the total maintenance required, and the associated costs, and agree with the other operators that serve the station (for whom the station is a "secondary station" what proportion of the costs are incurred by each TOC. This cost (referred to as "qualifying expenditure") is usually related to the proportion of total train services at that station which are operated by each TOC.
- 3.41 In the NMF qualifying expenditure is included in the "Station & Depot LTC" line items for major stations and secondary (TOC) stations.

Drivers of Changes in Station Maintenance

- 3.42 The NMF assumes that station maintenance (and qualifying expenditure) costs do not vary with the timetable operated. However, the user is able to specify an efficiency factor (for example to represent a reduction or increase in the level of station maintenance or a TOC facilitating a more efficient way of undertaking maintenance - delivering the same level of maintenance at a lower cost). Whilst the user specifies this efficiency factor by TOC, because of the transfer payments between TOCs it would be sensible to only apply efficiencies on an industry-wide basis (to all TOCs). Station maintenance costs are indexed to RPI.
- 3.43 The reason for station maintenance costs remaining fixed irrespective of the timetable operated is due to the fact that while an operator may change the level of train service provided, for example reducing the number of calls at a station, it is unlikely that the costs associated with the station will change. In practice the costs will simply be re-allocated to the other TOCs serving that station, and therefore will be no industry cost saving. Since the NMF primarily seeks to forecast industry costs, it is therefore correct

that the model forecasts no change in industry costs. Care should therefore be taken in reporting these costs by TOC.

- 3.44 Since station maintenance costs (unlike LTC) are not published (and indeed are very rarely known at this level by the TOCs themselves) it is not possible to estimate savings in maintenance costs if stations are closed.

Other costs

Key issues

- 3.45 When determining the functionality for forecasting staff costs in the NMF, one of the key factors was understanding what was appropriate given the level of information available for each TOC. Only very limited data on TOC staff salaries, numbers, roles and working locations was available, and the categories of staff and staff costs were rarely consistent (in terms of their titles). It was therefore decided that it would be misleading to attempt to implement complicated functionality if the data to which the functionality was applied was not robust.
- 3.46 A specific example of this problem is that the number (if any) of TOC staff involved in train maintenance is rarely specified by the TOC. This has an impact on how accurately one can forecast both rolling stock maintenance and staff costs.

Station Staff Salaries (Costs)

- 3.47 Changes in station staff costs are driven only by a user specified efficiency factor, and indexed to AEI. The efficiency factor is intended to proxy effects such as de-staffing, different staffing hours, changes in ticket retailing, changes in dispatch or customer care staff, or general productivity improvements through better rostering techniques
- 3.48 Only total station staff numbers are specified for each TOC, they do not reflect any modelling of staffing levels at individual stations. Since staff costs are likely to be the most escapable element of costs when stations are closed, this would be the first thing that would offer value in terms of enhancing the model. However, it would rely on TOCs providing such source information on a consistent basis, or making assumptions about numbers of staff per station based on station classification. The latter is likely to be the most deliverable of approaches.

Other Staff Salaries (Costs)

- 3.49 Categories of staff included in this category include HQ staff., fleet and maintenance staff and other management and supervisory staff.
- 3.50 Whilst the NMF provides only a single estimate of “Other Staff” numbers and costs, the model functionality estimates these costs based on different functionality (and assumptions) for the two main components of this item: namely HQ staff and fleet / maintenance staff.

HQ Staff

- 3.51 The NMF assumes that HQ Staff costs are driven by changes in HQ Staff numbers and changes in staff salaries. Staff numbers vary according to the following assumptions:

- 30% of HQ Staff numbers costs are fixed;
- 70% vary in proportion to on-train staff (an implicitly train hours) to reflect the fact that HQ tasks such as payroll and HR will vary with staff numbers.

3.52 The intention is that radical reduction in the scale of a TOC will result in a change in the modelled number of HQ Staff. (In principle, the parameters can be estimated from regression analysis of TOC HQ staff against train-hours and other staff numbers).

Fleet/Maintenance Staff

3.53 Changes in fleet and maintenance staff costs are also driven by fleet/maintenance staff numbers and changes in staff salaries, however staff numbers are driven by three factors: 30% of HQ Staff numbers costs are fixed;

- 20% of fleet/maintenance staff are fixed
- 50% vary with on-train staff (and hence train hours)
- 30% vary with HQ staff numbers.

3.54 Provision is made for the efficient number of other staff to change over time: this could be used to proxy a range of effects.

Staff redundancy costs

3.55 Provision has been made for the costs of staff made redundant when any area of staff employment (on-train, station or HQ) falls faster than a natural wastage rate, which can be input for the whole railway. If the natural wastage rate is set to 100% (i.e. all staff can leave “naturally” within a year), redundancy costs will be calculated as zero. The default assumption in the NMF is that natural wastage is 4% per annum.

3.56 Provision has been made for redundancy payments for each redundant member of staff to be expressed as a share of annual salary. The default assumption in the NMF is that the redundancy payment is equivalent to 25% of annual salary.

3.57 The calculation basis is:

- If the number of staff required has fallen faster, from the previous year, than can be sustained by the natural wastage rate, then the surplus must be made redundant (e.g. If 100 staff were employed in the previous year and 80 in this year, and the natural wastage rate is 4%, then 16 staff must be made redundant).
- Redundancy payments for each member of staff are calculated as the product of the annual salary and the redundancy payment as a share of this salary. So in the default case, where the redundancy payment is 25% of annual salary, the redundancy payment would be £120,000 (if the annual salary is £30,000).

3.58 Staff redundancy costs are summed across the three categories (on-train, station or HQ) of staff, National Insurance and pension costs are not added to redundancy costs.

Commission Other and Commission TOC

3.59 “Commission Other” represents the commission paid to third parties such as travel agencies. These costs are indexed to RPI.

- 3.60 “Commission TOC” represents the commission paid by that TOC to other TOCs from the selling of tickets for that TOC. These costs are indexed to RPI.
- 3.61 Consistent with their treatment in management accounts, the corresponding revenue received by TOCs is included in the “Other Revenue” category for the TOC.
- 3.62 In theory one would expect the net rail industry payment for Commission TOC should be zero. However, a number of operating cost data sources did not split commission into two categories. In these cases all commission has been allocated to the commission TOC line (as it is the bigger of the two). Therefore the costs and receipts will not equal.
- 3.63 Consideration was given to making commission vary with levels of TOC revenue, but the practical difficulty is that commission is a net item which depends on the sales of other TOCs. To model it correctly would require a matrix of TOC sales for other TOCs. Given that commission is zero-sum across all TOCs, there has been no attempt to model it in greater detail.

Performance DfT and Performance NR

- 3.64 Performance payments have only been included in NMF to enable the calibration of operating costs by TOC, they are not linked to the performance model or reliability metrics. Because neither of these performance payments can easily be modelled from any simple operational driver they are fixed, although indexed to RPI.
- 3.65 Performance payments are transfers between TOCs and DfT and hence a net cost (or, if performance exceeds benchmarks, revenue) to TOCs. Network Rail performance payments are transfers between TOCs and Network Rail and hence inherently “zero sum” within the industry with no effect on total costs.

Other Costs

- 3.66 “Other costs” account for between 10-30% of TOC operating costs, as reported in TOC management accounts. They cover items such as:
- Professional fees (lawyers, accountants and consultants);
 - Leases of HQ building and utilities;
 - Advertising and stationary/postage; and
 - Staff overheads, including uniforms, expenses and travel (especially for on-train staff).
- 3.67 For the purposes of the NMF “All other costs” has been calculated as a balancing item required to recreate total TOC costs in the management data.
- 3.68 Other costs have been sub-divided into three components:
- 30% of other costs are fixed;
 - 40% are variable with total-train hours, reflecting activities driven by train services such as train crew supervision, rostering and planning activities; and
 - 30% varies with staff in other categories (on-train and station), reflecting HQ activities such as payroll and HR.

- 3.69 This category of costs are indexed at RPI and the user is able to specify an efficiency factor which can be used to proxy a range of effects.

4. PREPARATION OF INPUTS TO THE TOCM AND INTRODUCTION TO THE OPERATING COST INPUT SPREADSHEETS (OCIS)

Introduction

- 4.1 As explained previously, the operating cost module (TOCM) in the NMF calculates change in operating cost arising from changes in service specification or user specified efficiencies. However the source cost information used in the sub-module was calculated in a spreadsheet model, referred to here as OCIS.
- 4.2 This chapter provides a description of the structure of the OCIS files used to convert source operating cost data into a format that can be read (via script¹) into the NMF database (and used in the TOCM).
- 4.3 It provides both a starting-point for a user wishing to update the NMF input data (should updated information become available), and as a source of background information for users analysing NMF forecasts or wishing to understand the source of data used in the model.
- 4.4 The OCIS generates outputs that are manually copied and pasted into a template “NMF Cost Module Inputs v1.x [date]” that is read directly into the TOCM Oracle database. Alternatively, updates can be made via the user interface (see section 8.3 of the User Guide). Appendix C describes parameters output by the OCIS.
- 4.5 Note that due to the need to capture **all** costs in the OCIS, the following refers to all costs elements, including those now supplanted by ICM. This is because the model is based on capturing the entire cost base of the TOCs and calculating appropriate cost rates for the modelling cost items. The model has not been reconfigured to reflect non-ICM items only.

Structure of OCIS Suite

- 4.6 The OCIS Suite was developed in order to convert information in the form that it is presented in the source information into a format that:
- i. can be read into the NMF database, and
 - ii. is consistent with the specified NMF operating cost forecasting functionality.
- 4.7 OCIS is formed of a suite of spreadsheets, a summary description of which is provided in Table 4.1. The reason for OCIS being split into separate workbooks was to ensure that the file sizes remained manageable (and transferable between users).

¹ Whilst users can edit TOC operating cost information via the NMF user interface, wholesale updating of the cost data may be more efficiently done via script.

TABLE 4.1 OCIS SUITE

Workbook	Purpose
NMF 1 Cost Module Inputs 1 v[x] [date]	Derives the majority of NMF efficiency and other factors
NMF 1 Cost Module Inputs 2 v[x] [date]	Forms the largest component of the OCIS and derives the main NMF unit costs from physical data and lump sum costs for input into the TOCM.
NMF Cost Module Inputs v1.x [date]	TOCM Input data spreadsheet. Data is output from the above files and is cut and pasted into this template which can then be read into the NMF database model.

NMF1 Cost Module Inputs 1 File

4.8 This workbook derives efficiency and other factors that may be used within the TOCM.

4.9 For v1.0 of the NMF, the default for these efficiency factors is 1.0 (implying no efficiencies or inefficiencies compared to the base data). However, the user is able to edit efficiency factors directly in the NMF for any test undertaken.

4.10 This file comprises three groups of sheets:

- Cover/control (a single worksheet)
- Working
- AEAT Outputs

4.11 The sheets within each of these groups are specified below (in italics) and their purpose described.

Cover/Control Sheets

4.12 The sheet COVER presents a workbook description, control and verification information. Other tabs separate the workbook by functional area.

Working

RPI_AEI

4.13 Calculates annual inflation factors for use in the TOCM. Currently based on annual inflation of 2.7%. Also calculates annual AEI and PPI index values.

EFFICIENCIES

4.14 Calculates generic efficiency factors by year for selected cost items that can be applied within the TOCM. Efficiencies can either be calculated as a per annum percentage improvement, or be manually input for any given year. A single efficiency factor for each selected line item is applied across all TOCs. Manual input is also possible within the TOCM.

EFC_TOC_YR

- 4.15 Calculates efficiency factors that can be varied between TOCs by year, including rolling stock maintenance efficiencies and station maintenance costs.

FACTORS

- 4.16 Calculates factors that can vary by year, currently based on SDG assumptions. FACTOR_PENSIONS_NI is set to 0 as these costs are included in salary inputs. These costs can be identified through this factor, but care must be taken not to double count in the model outputs.
- 4.17 REDUNDANCY_SHARE is used to calculate redundancy costs and reflects the assumed percentage of annual salary paid out in redundancy as staff costs change. These are editable in the NMF user front end by editing the Redundancy_share (using the NMF User Interface – going into the treeview and selecting “input”, “TOC Costs” and “TOC Costs data”).
- 4.18 STAFF_RETENTION is set at 4% and represents organic staff turnover/natural attrition that would not be subject to redundancy payment. This is editable in the NMF user front end in the same way as the redundancy share.

AEAT Outputs

- 4.19 This title is a slight misnomer as the two sheets in this group are actually outputs provided to AEA for incorporation in TOCM (having first been copied into the “NMF Cost Module Inputs v1.x [date]” file).

TCIN_Yr

- 4.20 This sheet picks up factors/parameters in other sheets and presents them in the template format required for input into the TOCM. These values are manually cut and pasted into the final TOCM inputs template. TCIn_Yr presents factors varying by Year, those that vary by year and TOC are reported in the outputs sheets section of “NMF 1 Cost Module Inputs 2.xls”.

Annual_Index

- 4.21 This sheet presents Inflation and AEI factors, calculated for each year based on constant annual inflation. Changes to inflation rates over time can be incorporated here.

NMF1 Cost Module Inputs 2

- 4.22 This is the main component of the OCIS and contains the operating cost input data for all NMF line items and translates this into resource requirements or unit cost rates.

Cover/Control Sheets

Cover

- 4.23 Contains version control and verification information. Each worksheet contains descriptive information in rows 1-6 which explain the purpose and contents of the sheet.

4.24 The workbook comprises five groups of sheets (which have been grouped according to their separate functional areas):

- Cover;
- Inputs>>;
- Derived_Costs>>;
- Recon>>; and
- Output to NMF Templates>>.

These groups are identified by yellow Tabs in the workbook and are identified below in bold italics

Cover

MAP

4.25 Presents a functional overview of the workbook with hyperlinked references to each workbook. Cell A1 of each sheet contains a hyperlink back to this sheet to aid navigation. Named ranges within the workbook are also listed. No macros are used within the workbooks.

Assumptions

4.26 This sheet contains key assumptions referenced by other sheets including inflation. A description of each assumption is provided. Rows 31-60 show the TOC codes used within the model, the associated NMF code used within the database application, and assumptions regarding remapping from old TOCs to baseline TOCs. These remappings do not apply to data taken from the December 2005 Timetable.

Inputs

INPUT_0_CODES

4.27 Contains Network Rail and NMF TOC codes referenced by other worksheets via lookup formulas.

4.28 Cells H9:I33 contain a flag that indicates if a vehicle is primarily a passenger vehicle or not. This is used in sheet LEASE_1 to calculate the total number of passenger vehicles but is no longer used in other calculations.

4.29 B64:G92 contains a correspondence between the TOCs used in the DfT Rolling Stock database (the DfT BRAIN contained in Sheet INPUT_3_RS_LEASE).

4.30 The tables below Row 94 match a long list of TOCs and Unit types with physical data supplied from the Timetable Editor used during model development. This is no longer used.

INPUT_1_TOC

4.31 This sheet contains hard coded inputs (Blue shaded cells). Cost data was sourced from Comparator Models, TOC Management Accounts as contained in the DfT ORACLE database, or from the DfT Network Economics Model (NEM). An input template was

developed to capture comparator model data. Inputs (blue shaded cells) can be directly overwritten.

4.32 Cost by NMF category, and Total cost information is looked up from the table below Row 228. A flag can be set to change the data source (for comparison purposes) to 04/05 ORACLE or AFFMOD Data (where the flags are: 0 = 04/05 ORACLE, 1=AFFMOD, 2=INPUT DATA). The Oracle and Affmod data is reported in rows 264 onwards in this sheet.

4.33 The cost categories included in this sheet are:

- staff numbers and salaries;
- station LTC;
- rolling stock maintenance;
- FTAC;
- supplementary charge; and
- commission and performance costs.

4.34 In addition the sheet contains total TOC costs according to the 5 broad categories that comprise total TOC operating costs (as recorded by the most reliable source of cost data for each TOC). The five categories are operating expenses, staff costs, rolling stock lease charges, access charges and RT performance incentives. This information is to calculate the Residual “unmodelled” NMF costs and allocate them to “Other Costs” in the sheets “Residual” and “Other” (described later in this Chapter).

INPUT_2_UNIT

4.35 This sheet contains input data by unit type (Traction costs, VTAC) and a factor that can be used to increase the relative cost of maintenance for particular vehicle types if required. This factor was intended to allow a user to balance costs to observed, or for new rolling stock types, for example, if one believes that an older unit should be relatively more expensive to maintain than a newer one. In practice this functionality was not used in OCIS, and it was not intended for use in the NMF front end.

INPUT_3_RS_LEASE

4.36 This sheet contains rolling stock lease data for all TOCs and the rolling stock they operate (including lease costs, expiry dates by TOC and unit type and numbers of seats by accommodation type extracted from the DfT BRAIN database). The VTAC and diesel cost rates in this sheet are not used in the NMF.

INPUT_4_VTAC

4.37 This sheet contains Variable Track Access Charge inputs by rolling stock type sourced from ORR published rates.

INPUT_5_CONSISTS

4.38 This sheet contains a long list of train formations and identifies the number of Locomotives, Coaches, Power Cars and Trailer units for each type used in the calculation of VTAC costs.

INPUT_6_PHYSICALS

- 4.39 This sheet contains ‘Physical’ Data by TOC and TOC_Unit type supplied by AEAT, extracted from the December 2005 Timetable. The full dataset for all TOCs and rolling stock types was output from the NMF database specifically for the purpose of using in the OCIS, however the user can output this information for individual TOCs by choosing a test which includes the December 2005 timetable and using the “Custom Report With Drill Down” option in the financials and physicals report) Daily physicals data is annualised (using an annualisation factor of 300) and it is this annualised data that is looked up by other sheets.

INPUT_7_ADDL_UNIT

- 4.40 This sheet is incomplete and is not used in the OCIS.

Derived Costs

LEASE_1 and LEASE_2

- 4.41 The LEASE_1 sheet is a copy of the INPUT_3_RS_LEASE rolling stock sheet based on the DfT’s “BRAIN” database, with a number of additional fields (columns) to permit integration into the rest of the spreadsheet. Key additional fields are column E, which contains a combined TOC and vehicle type index used for referencing, and columns AJ and AK, which contain derived passenger vehicle numbers (i.e. excluding locomotives, catering cars, etc.) and the product of vehicle and lease end date (used for calculating average lease expiries), respectively. The column E index data is generated, where possible, from the existing input fields, but in some cases has had to be adjusted manually (cells highlighted in yellow).
- 4.42 The LEASE_2 sheet brings together data items from the rolling stock (INPUT_3...) and the TOC timetable-related physicals (INPUT_6...), to create a table, by TOC and vehicle type, of number of vehicles, lease costs, annual vehicle hours operated, etc. For most TOC/vehicle-type combinations, the spreadsheet is able to do this automatically. However, for certain combinations, a manual adjustment is required (described below). It should be noted that the column “potential peak hours/total hours” is simply a check column.
- 4.43 The manual adjustment is necessary, when the definition of vehicle type in the rolling stock inputs is not compatible with that in the timetable physicals. In general, this happens when, the rolling stock information (BRAIN input data) is not held by vehicle consist, or when the vehicle consists in the BRAIN input data are incompatible with the timetabled vehicle hours for the consist. For example, with locomotive and passenger carriage stock, the rolling stock information does not distinguish between, say, 8- and 9-car HSTs (this happens on GNER), but these are shown as separate lines on the timetable physical data. In these cases, the manual adjustment made has been to assign the vehicles to each consist type pro-rata to the vehicle hours operated, according to the timetable physicals data, for that consist. This is based on the assumptions that annual hours per vehicle, within the vehicle type so adjusted, are the same. Where manual adjustments have been made, the relevant cells have been coloured yellow.

- 4.44 A further manual adjustment has been included in LEASE_2, to reflect the transfer of rolling stock between TOCs in the baseline timetable. The cells with this manual adjustment are highlighted red, in columns S and T (capital and non-capital lease costs), with changes also made in the corresponding Column X. The best example of this is the treatment of Gatwick Express trains that in the baseline timetable are transferred to Southern. Without the adjustments to the inputs file it was found that the NMF forecast an increase in Southern lease costs (as units transferred to them), but since the model assumes that lease costs are inescapable until the end of the lease term, costs on Gatwick Express did not decline at the right time.
- 4.45 This problem was avoided by adjusting the total lease costs and the potential peak unit hours (to ensure that the lease cost per unit hour remains the same) according to the proportion of the fleet that will transfer out of the TOC.
- 4.46 For example, assume it was known that TOC A would be transferring 50% of its units to another TOC. Currently the potential peak unit hours are 60 and the total lease cost is £6,000 per annum (giving a lease cost per unit hour of £100. The manual adjustment would be to reduce the lease costs to £3,000 and the potential peak unit hours to 30 (still giving a lease cost per peak unit hour of £100. In the base case the lease costs would still be correct as the timetable will forecast 60 peak unit hours, giving a lease cost of £6,000. However in the baseline the timetable will forecast 30 hours and therefore the lease cost will be £3,000, implicitly allowing the escapability.

TRAIN_STAFF

- 4.47 Calculates TRAIN_STAFF_PER_TRAIN_HOUR_BASE for each TOC_Unit by dividing On-Train staff numbers by train hours, weighted by first and standard seat numbers.

OTHER_STAFF

- 4.48 Calculates fixed staff numbers for non on-train staff for each TOC for the base year that remain static, and staff numbers variable with train hours and with the general level of staffing within the TOC. Outputs OTHER_FIXED_STAFF, OTHER_TRAIN_STAFF_PER_TRAIN_HR, and OTHER_OTHER_STAFF_PER_OTHER_STAFF. The cost of maintenance staff is assumed to be 30% fixed and 70% variable. HQ staff is assumed to be 20% fixed, 50% variable with on train staff and 30% variable with the level of general staffing.

SALARY

- 4.49 This sheet takes Salary inputs as described in paragraph 5.7 and calculates average annual salary levels for each NMF staff category, weighted by staff numbers. Salaries are inclusive of National Insurance and Pension contributions.

RS_MAINT

- 4.50 This sheet takes annual rolling stock maintenance costs at the TOC level and allocates these to each TOC_Unit, weighted by vehicle mile. This is then divided by unit miles to output MAINT_COST_PER_UNIT_MILE.

VTAC

4.51 Derives VTAC rates in pounds per unit mile for each NMF TOC_Unit depending on the make up of each TOC_Unit from published VTAC rates.

TRACTION

4.52 Derives DIESEL_PER_UNIT_MILE, and EC4T_PER_UNIT_MILE unit costs from NEM inputs.

RESIDUAL

4.53 The primary function of the RESIDUAL sheet is to identify the residual costs that have not been allocated to NMF cost categories. A more common name for these costs are “other costs”, and they cover such items as utilities, professional fees, marketing and stationary. In practice they account for between 15% - 30% of total TOC operating costs and comprise approximately 20 different individual line items (which are rarely consistent between TOCs).

4.54 Due to the lack of consistent detailed “other cost” information provided by TOCs and the strategic nature of the NMF, “other costs” are not modelled in detail. Instead their magnitude is assumed to be the difference between the line items that are modelled in detail (for example staff and rolling stock costs) and the total TOC operating costs. It is therefore inevitable that in the NMF “other costs” will also pick up the sum of the differences between the observed and modelled costs for the line items that are modelled in detail (however a review of the sheets in the “Recon” section of this spreadsheet shows that this is not a significant issue).

4.55 Other costs (termed the “residual” in this file) is calculated using the following steps:

- Recreate NMF calculations for the base year (using unit costs from the and calculate the total costs for each cost category : staff, rolling stock, Network Rail and Other (these are the columns highlighted in red);
- Sum the total modelled costs for each TOC (column CB);
- Report the total observed operating costs for each TOC from the INPUT_1_TOC sheet (column CC);
- Compare modelled and observed total costs to identify Other “Residual” costs (column CD); and
- Allocate Residual costs to “Other costs” (sometimes referred to as “Operating Expenses”) in the “Other” sheet.

4.56 It should be noted that in the first step, unit costs in this sheet are taken from the OUTPUT to NMF TEMPLATES sheets to provide a cross check against the TOCM and to give assurances that the OCIS is working correctly. In general, around 80% of TOC costs are captured by NMF categories, meaning that approximately 20% of TOC operating costs are assumed to be “other costs”. This is consistent with what one would expect in practice.

OTHER

4.57 Once the “other” (residual) costs are calculated the OTHER sheet defines how they are apportioned according to what is assumed to drive changes in “other costs”. 30% of other costs are assumed to be fixed, 40% variable with train hours and 30% variable

with general staffing levels. If the user is submitting a new set of data from the OCIS, these assumptions can be adjusted. The parameters OTHER_FIXED_BASE, OTHER_PER_TRAIN_HR and OTHER_OTHER_PER_OTHER_STAFF are output to the NMF template sheets by TOC.

Recon

- 4.58 The three sheets in this group show how modelled costs compare with observed costs. In particular these show how well specific cost categories are modelled by the NMF functionality.

INDUSTRY_RECON

- 4.59 The INDUSTRY_RECON sheet compares observed TOC costs with modelled costs for the base year (2004/05) for each TOC and for industry as a whole. Rows 9 to 18 present the observed costs, and the source, picked up from the INPUT_1_TOC sheet. These are presented by ORACLE/AFFMOD category.
- 4.60 Rows 26-39 presents modelled costs by the same categories, picked up from Rows 58-96. Rows 50-56 present differences (Modelled – Observed).
- 4.61 Cell B27 contains a flag that can be changed by the user. This can be used to include or remove the residual costs from the reconciliation. If this flag is set to 0, the user can examine the percentage of costs captured by defined NMF categories. When set to 1, the ‘other’ costs are included within the operating cost category. As the residual is calculated from Modelled – Observed costs, when the flag is set to 1, total modelled costs will equal observed costs. In other words, the ‘other’ costs category is a balancing item to observed costs.
- 4.62 For the purposes of user diagnostics, comparison GRAPHS, and a DIAGNOSTICS sheet are provided.

Output to NMF Templates

TCIn_TOC_Yr

- 4.63 This sheet picks up fixed costs, variable costs and parameters derived in other sheets and present them in the template format required for input into the TOCM. For the most part, costs are calculated for the base year for each TOC and are simply copied for future years. Inflation, growth and efficiency factors derived in NMF 1 Cost Module Inputs 1 v[x] [date] may be applied within the TOCM for future years. This sheet presents all values that may vary by TOC and Year (but excludes those varying by stock unit type).

TCIn_TOC_Yr_Unit

- 4.64 This sheet presents all values that may vary by TOC, Year and TOC_Unit. A similar approach is adopted for future years as for the TCIn_TOC_Yr sheet (except for the INESCAPABLE_%_LEASE_COSTS parameter, which is calculated based on the lease expiry date for the relevant rolling stock type, compared with the year for which the calculation is being made).

Output Parameters for TOCM - (NMF Cost Module Inputs v1.x[date])

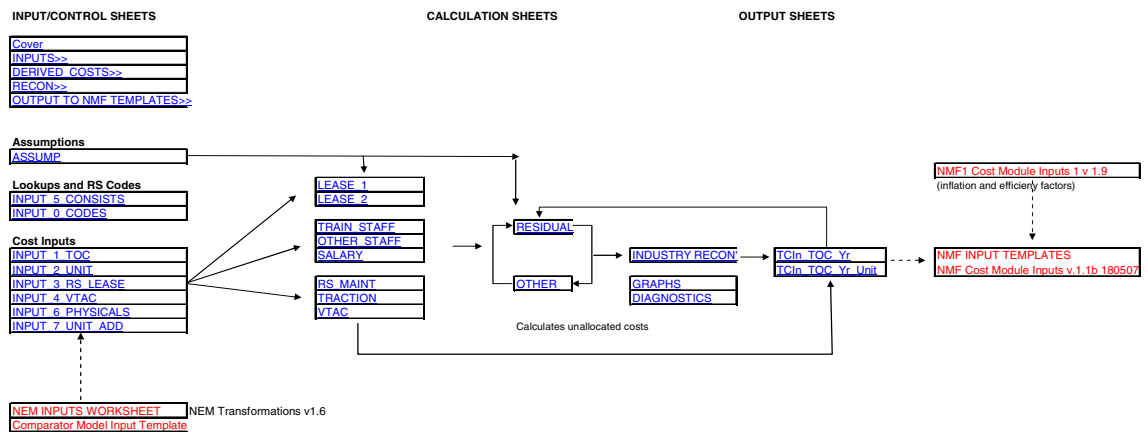
- 4.65 The OCIS generates outputs that are manually copied and pasted into a template “NMF Cost Module Inputs v1.x [date]” that is read directly into the TOCM Oracle database. Alternatively, updates can be made via the user interface (see section 8.3 of the User Guide). Table B1.1 describes parameters output by the OCIS.

5. POPULATION OF OPERATING COST INPUT SPREADSHEETS (OCIS)

Introduction

- 5.1 This chapter provides a detailed description of the structure of the files used to convert source operating cost data into a format that can be read into the NMF database. It is intended to provide a starting-point for a user wishing to update the NMF input data, should updated information become available. The overall structure is illustrated in Figure 5.1.

FIGURE 5.1 OCIS STRUCTURE



- 5.2 The importation of the information can be made by the user through the TOC costs editing function. Alternatively, for repetitive or significant data changes, the database can be updated via the use of appropriate Oracle scripts.
- 5.3 This chapter is very detailed and is considered not relevant to day-to-day users of the NMF, although should they wish to interrogate the data inputs to the model by reviewing the conversion of source data into NMF input data, which is described in the following chapter, a brief review of this chapter may facilitate understanding.
- 5.4 It should be noted that whilst the structure and functionality of the OCIS was designed having first specified the functionality of the operating cost model (TOCM) and therefore the required inputs, it was prepared in advance of much of the source data being provided. This has inevitably led to some redundancy in terms of presentation of the OCIS suite and functionality therein and some lack of transparency (as different data sources had to be used for different line items and TOCs). However, having completed the preparation of inputs to the TOCM, some cosmetic changes have been made to OCIS to improve its user friendliness.
- 5.5 TOC operating costs are traditionally split into five major categories, namely:
- Staff Costs;
 - Rolling Stock Lease Costs;
 - Network Rail Costs;
 - Other Operating Costs; and
 - Train Performance Incentive Payments.

5.6 The sections below outline how each of the major elements of TOC operating costs are entered into the OCIS, and how they contribute to the calculation of the cost parameters passed from the OCIS into the TOCM.

Cost Inputs to OCIS

Staff Costs

Inputs

5.7 Staff costs are entered as numbers of staff, and corresponding salary levels, inclusive of National Insurance and Pensions contributions, by TOC and occupational category:

- On-train staff (comprising drivers and other operational staff, including conductors and revenue protection inspectors);
- Station staff; and
- Other staff (comprising fleet/maintenance staff, HQ staff and other managerial and support staff).

5.8 The data are entered in the INPUT_1_TOC sheet of the OCIS (below row 8) in the OCIS spreadsheet.

Outputs

5.9 The outputs from the OCIS which feed into the main operating cost sub-module (TOCM) are presented in the sheets TCIn_TOC_Yr_Unit and TCIN_TOC_Yr.

5.10 The sheet TCIn_TOC_Yr_Unit contains the input data for numbers of on-train staff per train hour by TOC and stock type (defined by the column heading TRAIN_STAFF_PER_TRAIN_HR). These assumptions are only provided for one year, it is assumed that they remain constant throughout the forecast period.

5.11 The sheet TCIN_TOC_Yr contains the input data for the following line items, by TOC, stock type and year. However all years are assumed to be identical as growth in salaries is calculated by the TOCM, to allow AEI to be varied by the user:

- Total number of station staff by TOC in 2005/6 (defined by the column heading STATION_STAFF_BASE).
- Three components of total number of other staff by TOC in 2005/6. These are defined by the column headings:
 1. HQ_STAFF_FIXED BASE (number of other TOC staff: that remain unchanged in each test);
 2. HQ_TRAIN_STAFF_PER_TRAIN_HR_BASE (number of other TOC staff: those that vary with train hours); and
 3. HQ_STAFF_PER_OTHER_STAFF_BASE (number of other TOC staff: those that vary with train hours).
- Staff salaries for each of the three staff categories, these are defined by the column headings
 1. ON_TRAIN_STAFF_SALARY_REAL;
 2. STATION_STAFF_SALARY_REAL; and

3. OTHER_STAFF_SALARY_REAL.

- 5.12 In addition, the following data items are estimated and entered directly into the model.
- STAFF_RETENTION
 - REDUNDANCY_SHARE
 - FACTOR_PENSIONS_NI
- 5.13 Whilst the functionality of the sub-module includes a line item for employers NI and Pensions contributions, when source information was supplied, very few TOCs provided this information as a separate category and therefore FACTOR_PENSIONS_NI is set to zero to reflect inclusion of Pensions and National Insurance payments in salary input data.
- 5.14 Costs per train hour were calculated using this data and timetable outputs from the NMF December 2005 Timetable.

Rolling Stock Lease Costs

- 5.15 In respect of the capital cost and long-term maintenance (non-capital rental cost). The data are entered on sheet INPUT_3_RS LEASE of the OCIS. Rolling stock lease data contributes to the following data output parameters passed to the TOCM:
- TOTAL_LEASE_CAPITAL_COSTS.
 - TOTAL_NON_CAPITAL_LEASE_COSTS.
 - INESCAPABLE_%_LEASE_COSTS.

Network Rail (and station) Costs

- 5.16 Network Rail costs are the charges paid by train operators to Network Rail in respect of:
- fixed and variable track access,
 - stations and depots (major stations charges for NR-operated stations, long term charges for TOC-operated stations, maintenance charges),
 - EC4T; and
 - capacity charges and supplementary charges.
- 5.17 Station facility operator charges, paid by one TOC using a station operated by another TOC to that TOC, while not strictly a Network Rail charge, and have been included in this cost. Station maintenance costs are also included in this category.
- 5.18 The data are entered into the OCIS, as follows:
- Fixed Track Access Charges (FTAC) – sheet INPUT_1_TOC, below line 102;
 - Variable Track Access Charges (VTAC) – sheet INPUT_4_VTAC;
 - Station Long Term Charges (LTC) to NR – sheet INPUT_1_TOC, below line 40;
 - Station Facility Operator Charges to other TOCS – as LTC;
 - Station Maintenance Charges to NR – as LTC;
 - Major Station Charges – as LTC;

- EC4T - sheet INPUT_2_UNIT, column F;
 - Capacity Charges
 - Supplementary Charges - sheet INPUT_1_TOC, below line 133.
- 5.19 Where station cost information was not available by Station Facility Owner, the entire cost has been allocated to the Station Long Term Charges category.
- 5.20 The Network Rail Costs inputs contribute to the calculation of the following parameters passed to the TOCM:
- FTAC_REAL
 - VTAC_REAL
 - STATION_LTC
 - STATION_MAINTENANCE_BASE
 - CAPACITY_CHARGE_BASE
 - EC4T_BASE
 - EC4T_INDEX
 - SUP_CHARGE_BASE

Other Operating Costs and Performance Payments

- 5.21 With the exception of train performance incentive payments, all costs not covered in the sections above are included in the “Other Operating Costs” category. For convenience, we also include Performance Payments in the discussion below. Important elements of this category are train maintenance, diesel fuel (where applicable) and commission payments, and these are explicitly modelled within the OCIS. A significant proportion of the “other operating costs” category are however, derived as a residual amount, as described in Chapter 3.
- 5.22 Therefore, the key inputs for the Other Operating Cost category include Total Operating Costs, as well as those elements for which an explicit input is available. These are entered into the OCIS as follows:
- Total Operating Costs - sheet INPUT_1_TOC, below line 196;
 - Rolling Stock Maintenance Costs - sheet INPUT_1_TOC, below line 71;
 - Rolling Stock Maintenance Cost Relativities (between vehicle types for each TOC) - sheet INPUT_2_UNIT, column J;
 - Diesel fuel costs - sheet INPUT_2_UNIT, column H;
 - Commission and performance payments - sheet INPUT_1_TOC, below line 164.
- 5.23 The Other Operating Cost inputs contribute to the calculation of the following parameters passed to the TOCM:
- MAINTENANCE_COSTS
 - DIESEL_BASE
 - COMMISSION_TOC_BASE
 - COMMISSION_OTH_BASE
 - PERFORMANCE_NR_BASE

- PERFORMANCE_DfT_BASE
- OTHER_FIXED_BASE
- OTHER_TRAIN_STAFF_PER_TRAIN_HR_BASE
- OTHER_OTHER_STAFF_PER_OTHER_STAFF_BASE

5.24 Where commission payments are not available by type (e.g. Inter-TOC commission or other commission) this entire cost has been included in the Inter-TOC commission category.

Total Operating Costs

5.25 Total Operating Cost values for each TOC are used for validation, and for calculation of a “residual” element for operating cost elements not otherwise captured. The sources for these data are detailed below. 2005/06 data was used for all TOCs.

Non-cost Inputs to OCIS

5.26 In addition to the cost inputs described the OCIS also requires non-financial inputs, in order to permit the calculation of unit cost parameters passed to the TOCM. These are discussed in the sections below.

TOC and vehicle Codes

5.27 There are a number of different coding systems in the industry for identifying TOCs, vehicle types etc. In particular, TOCs are coded differently by Network Rail, in the DfT’s “BRAIN” rolling-stock database and the DfT’s NEM system. Where possible, Network Rail TOC codes (H-Codes) have been adopted for use within the NMF. Where no Network Rail code is available, we have created a new code, prefixed by a Z. These may be updated at a later date when Network Rail allocates a code. Table 5.1 presents the TOCs and Codes contained within the OCIS.

TABLE 5.1 TOC CODES USED WITHIN THE OCIS

Code	TOC
HG	Central Trains
HO	Chiltern Railway Co.
HT	c2c
HV	Gatwick Express
HB	GNER
EB	One
HI	Midland Mainline
ED	Northern Rail
HW	Southern
HA	First ScotRail
HP	Silverlink Train Services
EA	First Trans Pennine
HF	Virgin West Coast Trains
HH	Virgin CrossCountry Trains
HL	Arriva Trains Wales
EK	Integrated Kent Franchise

EF	Greater Western
HY	Southwest_Island
EG	Thameslink/GN
Z1	East Midland
Z2	West Midland
Z3	Cross Country
Z4	Silverlink Metro
Z5	Grand Central

5.28 A cross-reference between the different vehicle codes has been compiled and is to be found on the INPUT_0_CODES sheet of the OCIS.

5.29 Rolling stock is identified by specific formation type for each TOC as follows. TOC Code_Unit Type-Number of vehicles. For example HL_142-2 represents a 2-car class 142 operated by Arriva Trains Wales (HL). A four-car formation would be represented as HL_142-4.

5.30 In addition, the INPUT_0_CODES sheet contains a table to determine whether a vehicle, identified in the DfT BRAIN rolling stock data (to be found on INPUT_3_RS LEASE), is a passenger vehicle

Staff Numbers

5.31 Staff number information is input to the OCIS, along with salary data, as part of the input of staff costs.

Vehicle Consists

5.32 Vehicle consist information gives important information about the formation of locomotive and carriages, and of multiple units. This includes, for example, the type of traction, the number of vehicles per unit (where applicable), including motorised and trailer vehicles, as well as the number of first and standard class seats. This information was provided by AEA based on the stock operated in the December 2005 timetables as part of NMF and is entered into the OCIS on the INPUT_5_CONSISTS sheet.

5.33 The vehicle consist data is used to support the calculation of the following parameters passed to the TOCM:

- VTAC_REAL

Timetable “Physicals” data

5.34 The key cost driver in the TOC Cost Model is the train timetable, and hence timetable-related information is necessary to derive the unit cost parameters used within the TOCM. The relevant “physical” data was extracted from the December 2005 timetable by AEA, for entry into the OCIS “INPUT_6_PHYSICALS” sheet. The data items provided are as follows:

- TOC

- Leased Unit (class number and no. of vehicles per unit)
- Peak Unit Hours
- Unit Hours
- Unit Miles
- Train Hours
- Train Miles
- Standard Seat Hours
- First Seat Hours.

5.35 This information is used in the calculation of the following parameters provided to the TOCM.

- POTENTIAL_PEAK_UNIT_HRS
- MAINTENANCE_COSTS
- EC4T_BASE
- DIESEL_BASE
- TRAIN_STAFF_PER_TRAIN_HR
- OTHER_TRAIN_STAFF_PER_TRAIN_HOUR
- OTHER_OTHER_STAFF_PER_TRAIN_HOUR

APPENDIX A
COST ITEMS SUPPLANTED BY ICM

A1. OPERATING COST CATEGORIES AND FUNCTIONALITY IN TOCM

Cost Line Categories Modelled in NMF, but supplanted by ICM

A1.1 APPENDIX: TABLE A1.1 lists the cost line items individually modelled in the NMF operating cost sub-module, but supplanted by ICM. All are calculated at industry, sector and TOC level. In addition, some (as noted in the table) are calculated by stock type and TOC.

APPENDIX: TABLE A1.1 OPERATING COST CATEGORIES MODELLED IN NMF, BUT SUPPALNTED BY ICM DATA

Staff	Rolling Stock	Network Rail costs	Station costs	Other
<i>Financials</i>				
		Variable track access costs (VTAC) (by stock type)	Station & Depot Long Term Charge (LTC) (Major Stations)	Capacity charge
		Electric Current for Trains (EC4T) (by stock type)	Station & Depot LTC (SFO)	
		Fixed track access costs (FTAC)	Station & Depot LTC (TOC)	
		Supplementary Charge		

A1.2 Whilst the intention was to model a consistent set of operating costs for each TOC, delays in the provision of data and the inconsistency of categories of operating cost reporting by individual TOCs meant that this could not be achieved. Efforts to achieve consistency were focussed on those cost categories which would have a material impact on operating cost forecasts. The user will therefore notice in the financials and physicals reports from each test that cost information reports for TOCs is not consistent, particularly for station LTC, capacity charge and supplementary charges.

A1.3 Care should be taken when interpreting some of the cost line items, as it was necessary to complete the calculation and reporting functionality of the TOCM before source data was finalised. This affects Station Long Term Charges in particular. For many TOCs, cost data for LTC was not split by the type of station (major stations, station facility operators or secondary stations). In these instances the costs are reported according to the line items provided by the TOC. Since the NMF functionality assumes that LTC are fixed, the inability to split LTC accurately will not affect operating costs forecasts.

Assumed Drivers of Operating Costs

A1.4 APPENDIX: TABLE A1.2 summarises the drivers of operating costs, for quick reference.

APPENDIX: TABLE A1.2 SUMMARY OF DRIVERS OF TOC OPERATING COSTS

NMF Operating Cost Item	Primary Driver	Secondary Driver	Tertiary Driver
VTAC	Change in unit miles by stock type		RPI
EC4T	Change in unit miles by stock type	Efficiency assumption (to reflect price of electricity)	Fixed in nominal terms
FTAC	ORR defined values for 2005/6 -2008/8, thereafter fixed in real terms		
Supplementary Charge	Fixed		RPI
Station & Depot LTC (all categories) and qualifying expenditure	Fixed		RPI
Capacity charge	Fixed		RPI

EC4T costs

- A1.5 Changes in EC4T costs are driven by changes in unit miles by stock type. Whilst EC4T costs cannot be changed to reflect changes in consumption rates for individual rolling stock types, the user can reflect changes in the price of electricity (and therefore the impact on EC4T costs) by editing the EC4T efficiency factor in the NMF (using the NMF User Interface – going into the treeview and selecting “input”, “TOC Costs” and “TOC Costs data”).
- A1.6 The cost per unit-mile (calculated in OCIS) was derived from data prepared for NEM which themselves were based on the ORR published rates for 2001/2. These were then uplifted to 2004/5 prices.
- A1.7 It should be noted that whilst in practice the EC4T costs of a 8-car train are marginally lower than those for a 4-car train, this efficiency is not reflected in the NMF. In the NMF the costs for (say) multiple units running together are taken as directly proportional to the number of units coupled together. (i.e. 8-car Class 319 is currently modelled as costing twice as much as 4-car Class 319. This slightly overstates the EC4T costs but is necessary for the model to “see” all such trains as being “Class 319”).
- A1.8 Again, it should be noted that at TOC level, percentage changes in unit miles will usually not be identical to changes in EC4T due to variations in the proportions of miles operated by different stock types.

Variable track access charges

- A1.9 Variable track access charges (VTAC) are driven by changes in unit miles by stock type and increase by RPI each year.
- A1.10 VTAC charges are based on ORR published rates for power and trailer vehicles, combined to give the NMF unit types. Where published rates were not available, VTAC rates for a similar vehicle class were used.

Station and Depot LTC (MJR, SFO, TOC)

- A1.11 Where sources information has been provided at a sufficient level of dis-aggregation, station and depot long term charges are modelled as three separate items:
- Charges payable to Network Rail by TOCs, relating to major (MJR) stations;
 - Charges payable to Network Rail by TOCs acting as SFO; and
 - (Net) charges payable to/receivable from other TOCs where one TOC is SFO and another uses the station (these charges are zero-sum).
- A1.12 Where source information provides only one line of cost information covering all categories, in the NMF it is presented under “Station and depot LTC SFO”.
- A1.13 LTC line items include qualifying expenditure paid by a TOC to another TOC.
- A1.14 Other than increasing in line with RPI, LTC (and qualifying expenditure) is fixed, they do not change in response to changes in the timetable. This reflects the fact that in practice, if a station is served by a number of TOCs, a reduction in services operated by one TOC will not result in a

reduction in total station costs, they will simply be re-allocated between the TOCs. The industry costs (which the NMF model seeks to forecast) will not change.

- A1.15 Neither does NMF calculate changes in LTC that may occur as a result of closures of stations or sections of the network. This is because defining escapable costs in such instances is extremely complex, and not something that should be automated (often this would overstate savings in costs). However, the user is able to amend station LTC by TOC, should information on cost savings be available from other studies. This would need to be implemented as an overlay in the NMF front end.

Interpretation of LTC and Qualifying Expenditure Costs in NMF

- A1.16 The presentation of qualifying expenditure costs by TOCs in their management accounts (or by consultants in comparator models) is an area of inconsistency. It was therefore particularly difficult to identify which costs should be included in the “station maintenance line item”.
- A1.17 Qualifying expenditure costs should be reflected both in the revenue and cost sections of a TOC management accounts, since within the industry comprise the following:
- A1.18 Maintenance costs incurred at stations where the TOC A is SFO are identified as “station maintenance costs” (and should be listed in the cost section of management accounts). In the NMF these are indeed recorded in the Station Maintenance line item.
- A1.19 Where TOC A calls at a station where TOC B is SFO (this station is a “secondary” station for TOC A), TOC A will contribute to TOC B’s station maintenance by paying TOC B “qualifying expenditure”. These payments can be recorded in two different ways in management accounts:
- The payments of qualifying expenditure from TOC A to TOC B will appear in the cost section of TOC A (under the LTC line item) and in the other revenue section of TOC B; or
 - A single net qualifying expenditure value included in the costs section.
- A1.20 In the NMF the former approach is used.

Fixed track access charges

- A1.21 FTAC are calculated based on a “jam-spread” of costs, following calculation and apportionment of VTAC to TOCs. Broadly there is a relationship with train miles operated by the TOC, however there is no simple relationship between train miles and savings or increases in FTAC. Any savings would be step-change, and the subject of negotiation.
- A1.22 In NMF v1.0 Fixed track access charges specified by TOC for each year over the period 2005 – 2009 (CP3) in accordance with ORR guidance. Thereafter they remain fixed other than varying with RPI.

Capacity Charge

- A1.23 Capacity (congestion) charges reflect the costs paid by the TOC to Network Rail, where a TOC operates a different train service to that operated in 1999. Rates are calculated on a cost per vehicle mile, and vary by geography. However because the calculation of the net change in vehicle miles compared to 1999 by geography is complex and because the cost information

from TOCs rarely presents the costs in a consistent manner (if at all), capacity costs in the NMF have been treated in a simple manner.

A1.24 Where TOCs have provided a line item for capacity costs, the cost is included in NMF but remains fixed, (irrespective of timetable operated) and is indexed at RPI.

Supplementary Charges

A1.25 Supplementary charges are:

- Identified only as an aggregate item for each TOC.
- Indexed at RPI from 2004/5 levels.

APPENDIX B
SOURCE OF OPERATING COST DATA USED IN NMF V1.0

B1. DATA SOURCES FOR OPERATING COST INFORMATION IN NMF V1.0.1

APPENDIX: TABLE B1.1 DATA SOURCES IN NMF V1.0.1

TOC	Staff Information	Details	Staff	Supp Charge and Station Costs	Rolling Stock Maintenance, performance and Commissions Information	Total Operating Costs (used to calc "other costs")	Rolling Stock: Capital & Non-Capital Leases	Diesel	EC4T	VTAC	FTAC
Central Trains	Financial Model	Central Trains Remapping Model	✓	✓	✓	Oracle	DfT BRAIN Database	NEM	NEM (ORR 2001/2 published rates)	ORR published rates	ORR published rates for CP3
Chiltern Railway Co.	NEM	2004/05 Data Used	✓	Oracle Data 2004/05 Data Used for Some Items	Oracle	Oracle	DfT BRAIN Database	NEM	NEM (ORR 2001/2 published rates)	ORR published rates	ORR published rates for CP3
c2c	NEM	2004/05 Data Used	✓	Oracle Data 2004/05 Data Used	Oracle 2004/05 Data Used for Rolling Stock Maintenance	✓	DfT BRAIN Database	NEM	NEM (ORR 2001/2 published rates)	ORR published rates	ORR published rates for CP3
Gatwick Express	Financial Model	BML RUS Model	✓	✓	✓	✓	DfT BRAIN Database	NEM	NEM (ORR 2001/2 published rates)	ORR published rates	ORR published rates for CP3

Toc Operating Costs Documentation

TOC	Staff Information	Details	Staff	Supp Charge and Station Costs	Rolling Stock Maintenance, performance and Commissions Information	Total Operating Costs (used to calc "other costs")	Rolling Stock: Capital & Non-Capital Leases	Diesel	EC4T	VTAC	FTAC
GNER	Comparator Model		✓	✓	✓	✓	DfT BRAIN Database	NEM	NEM (ORR 2001/2 published rates)	ORR published rates	ORR published rates for CP3
One	Comparator Model		✓	✓	✓	✓	DfT BRAIN Database	NEM	NEM (ORR 2001/2 published rates)	ORR published rates	ORR published rates for CP3
Midland Mainline	Financial Model	MML Rebased Franchise Extension Model	✓	✓	✓	✓	DfT BRAIN Database	NEM	NEM (ORR 2001/2 published rates)	ORR published rates	ORR published rates for CP3
Northern Rail	Oracle		✓	✓	Oracle	✓	DfT BRAIN Database	NEM	NEM (ORR 2001/2 published rates)	ORR published rates	ORR published rates for CP3
Southern	Financial Model	BML RUS Model	✓	✓	✓	✓	DfT BRAIN Database	NEM	NEM (ORR 2001/2 published rates)	ORR published rates	ORR published rates for CP3

TOC	Staff Information	Details	Staff	Supp Charge and Station Costs	Rolling Stock Maintenance, performance and Commissions Information	Total Operating Costs (used to calc "other costs")	Rolling Stock: Capital & Non-Capital Leases	Diesel	EC4T	VTAC	FTAC
First ScotRail	Comparator Model		✓	✓	✓	✓	DfT BRAIN Database	NEM	NEM (ORR 2001/2 published rates)	ORR published rates	ORR published rates for CP3
Silverlink Train Services	Financial Model	Central Trains Remapping Model	✓	✓	✓	✓	DfT BRAIN Database	NEM	NEM (ORR 2001/2 published rates)	ORR published rates	ORR published rates for CP3
First Trans Pennine	Financial Model	TOC's Financial Model	✓	✓	✓	✓	DfT BRAIN Database	NEM	NEM (ORR 2001/2 published rates)	ORR published rates	ORR published rates for CP3
Virgin West Coast	Financial Model	Budget Model	✓	✓	✓	✓	DfT BRAIN Database	NEM	NEM (ORR 2001/2 published rates)	ORR published rates	ORR published rates for CP3
Virgin CrossCountry	Financial Model	Budget Model	✓	✓	✓	✓	DfT BRAIN Database	NEM	NEM (ORR 2001/2 published rates)	ORR published rates	ORR published rates for CP3

Toc Operating Costs Documentation

TOC	Staff Information	Details	Staff	Supp Charge and Station Costs	Rolling Stock Maintenance, performance and Commissions Information	Total Operating Costs (used to calc "other costs")	Rolling Stock: Capital & Non-Capital Leases	Diesel	EC4T	VTAC	FTAC
Arriva Trains Wales	Financial Model	TOC's Financial Model	✓	✓	✓	✓	DfT BRAIN Database	NEM	NEM (ORR 2001/2 published rates)	ORR published rates	ORR published rates for CP3
Integrated Kent Franchise	Comparator Model		✓	✓	✓	✓	DfT BRAIN Database	NEM	NEM (ORR 2001/2 published rates)	ORR published rates	ORR published rates for CP3
Greater Western	Comparator Model		✓	✓	✓	✓	DfT BRAIN Database	NEM	NEM (ORR 2001/2 published rates)	ORR published rates	ORR published rates for CP3
SouthWest Trains	NEM	2004/05 Data Used	✓	Oracle	Oracle 2004/05 Data Used for Rolling Stock Maintenance	Oracle	DfT BRAIN Database	NEM	NEM (ORR 2001/2 published rates)	ORR published rates	ORR published rates for CP3
First Capital Connect	Comparator Model		✓	✓	✓	✓	DfT BRAIN Database	NEM	NEM (ORR 2001/2 published rates)	ORR published rates	ORR published rates for CP3

APPENDIX C
NMF OPERATING COST PARAMETERS OUTPUT BY OCIS

C1. NMF OUTPUT PARAMETERS OUTPUT BY OCIS

APPENDIX: TABLE C1.1 NMF OCIS OUTPUTS = TOCM INPUTS

Input	Units	Description	OCIS Sheet
Factors			
RPI	Number By Year	Inflation Factor	1
AEI	Number By Year	Inflation Factor	1
FACTOR_DAY_YR	Number By TOC	Annualisation factor for timetable physical data	1
PPI_X	Number	Growth factor for capital lease costs.	1
Efficiency Factors			
TRAIN_STAFF_EFC			
STATION_STAFF_EFC			
OTHER_FIXED_STAFF_EFC			
OTHER_TRAIN_STAFF_EFC			
EC4T_EFC			
DIESEL_EFC	Factor Base =1	Factor that can be applied each year to represent assumed efficiency/productivity changes over time. Can be manually adjusted in each year to reflect changes to exogenous factors	1
SUP_CHARGE_EFC	By Year		
PERF_NR_EFC			
DfT_PERF_EFC			
OTHER_EFC			
MAINTENANCE_EFC			
STATION_EFC			
STAFF_RETENTION	% base = 4%		
REDUNDANCY_SHARE	% (base = 25%	Used in the calculation of redundancy payments.	11
FACTOR_PENSIONS_NI	%	Can be used to estimate National Insurance and Pension contributions from annual salary amounts already included in salary totals. Care should be taken not to double count if using this factor	1
INESCAPABLE_%_LEASE_COST	% by TOC Year and Unit	Assumed % of lease costs that remain fixed if train miles decrease below efficient levels within a given lease period	1
Costs/physicals			
STATION_STAFF_BASE	Number by TOC and Year	Fixed input in base year	2
OTHER_FIXED_STAFF_BASE	Number by TOC and Year	Fixed staff input for staff other than on-train and station	2
OTHER_TRAIN_STAFF_PER_TRAIN_HR_BASE	Number by TOC and Year	Input variable with train hours to generate staff numbers other than on-train and station	2
OTHER_STAFF_PER_OTHER_STAFF_BASE	Number by TOC and Year	Used to calculate staff numbers other than on-train and station variable with general staffing levels	2
ON_TRAIN_STAFF_SALARY_REAL	£, Year, TOC	Base on train staff salary level	2
STATION_STAFF_SALARY_REAL	£, Year, TOC	Base station staff salary level	2

Toc Operating Costs Documentation

Input	Units	Description	OCIS Sheet
OTHER_STAFF_SALARY_REAL	£, Year, TOC	Base other staff salary level	2
FTAC_REAL	£,Year,TOC	Assumed FTAC payments for each TOC	2
STATION_LTC_MJR_BASE	£, Year, TOC	Station charges for major stations	2
STATION_LTC_SFO_BASE	£, Year, TOC	Net station charges for franchised owner stations	2
STATION_LTC_TOC_BASE	£, Year, TOC	Net payments to other TOCs for stations	2
CAPACITY_CHARGE_BASE	£, Year, TOC	Base year capacity charge	2
SUP_CHARGE_BASE	£, Year, TOC	Base year supplementary charge	2
COMMISSION_TOC_BASE	£, Year, TOC	Net commission payments between TOCs	2
COMMISSION_OTH_BASE	£, Year, TOC	Net other commission payments	2
PERFORMANCE_NR_BASE	£, Year, TOC	Net performance payments to NR in the base year	2
PERFORMANCE_DfT_BASE	£, Year, TOC	Net performance payments to DfT in the base year	2
OTHER_FIXED_BASE	Number, Year, TOC	Number of staff, not on-train or station not variable with other inputs	2
OTHER_TRAIN_STAFF PER_TRAIN_HOUR_BASE	#/train hour,Year, TOC,Unit	Used to calculate general (not on-train or station) staff numbers variable with train hours	2
OTHER_STAFF_PER_OTHER_STA FF_BASE	£, Year, TOC	Used to calculate general (not on-train or station) staff numbers variable with staffing levels	2
TOTAL_LEASE_CAPITAL_COSTS	£,Year, TOC,Unit	Base year lease costs	2
POTENTIAL_PEAK_UNIT_HRS	£,Year, TOC,Unit	Efficient peak unit hours used to calculate fleet requirements	2
TOTAL_NON_CAPITAL_LEASE_CO STS_NOMINAL	£,Year, TOC,Unit	Base year non-capital lease costs	2
MAINTENANCE_COSTS	£/unit mile,Year TOC,Unit	Base year rolling stock maintenance costs	2
VTAC_REAL	£/unit mile,Year TOC,Unit	Base year VTAC rate	2
EC4T_BASE	£/unit mile,Year, TOC,Unit	Base year EC4T rate	2
DIESEL_BASE	£/unit mile,Year, TOC,Unit	Base year fuel rate	2
TRAIN_STAFF_PER_TRAIN_HOUR	£/Train hour,Year, TOC,Unit	Base year train staff rate variable with train hours	2

CONTROL SHEET

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