



Performance Audit Group's Annual Report **2016/17**

An independent public report on Scotland's
trunk road maintenance



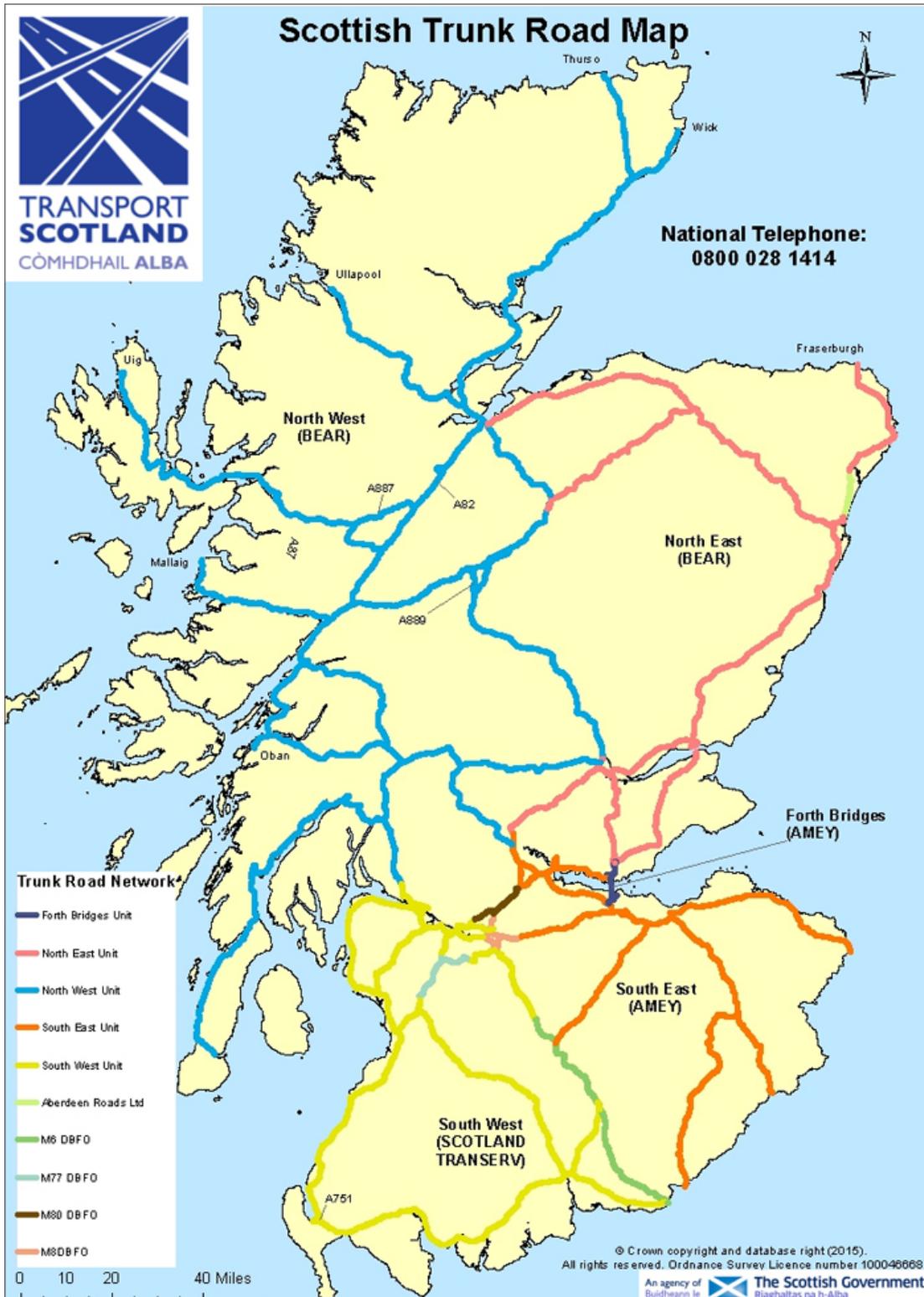


Figure 1-The Scottish trunk road network (2016/17) and how it is divided up for contract purposes (see Figure 1-02 - 1-05 for details of the Units)

Foreword

This is the Performance Audit Group's (PAG) annual report on the management and maintenance of Scotland's trunk road network for 2016/17.

This report summarises the extensive work carried out by our experienced multi-disciplinary team over the last year, led by CH2M. Our role is to audit, monitor and report on the performance of the Operating Companies (OCs) in managing and maintaining the Scottish trunk road network.

Our team works closely with our client, Transport Scotland, who is committed to effectively managing the network. The overall aim of all parties is to raise standards and assist Transport Scotland in providing a safe and reliable network. Our team's approach to the commission is one of working closely with Transport Scotland and the OCs to provide:

- quality of service
- asset enhancement
- value for money

and collectively deliver sustainable value to all stakeholders.

We trust you find our latest report clear, comprehensive and informative.



Eddie McDowell
Commission Director
PAG
CH2M
December 2017

Executive summary

The 4G contracts have generated savings through the competitive procurement process when compared to prices under the 3G contracts for similar operations.

Savings of £4.4m were delivered during 2016/17, with cumulative savings of £24.7m delivered to date over the life of the 4G contracts.

The budget for 2016/17 of £176.4m was up £32.8m (22.8%) from the previous year.

Improvements in the level of service across the network were achieved in numerous areas as highlighted in the 'Performance at a glance' table on page 4-6; and to a much lesser degree, performance reduced in some areas.

Overall, every OC has been assessed as having achieved an improved performance compared to the previous year. The most sizeable improvement being achieved by SE.

Forth Bridges delivered a very good performance throughout the period. Special recognition is made to achieving the 'Greatest Contribution to Scotland' award at the 2016 Saltire Society Civil Engineering Awards ceremony.

NW, NE and SE each delivered good performances overall.

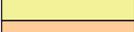
SW, whilst delivering clear improvement in many areas; performance still remains fair overall.

The PAG team is proud of our ongoing and effective contribution to the successful management and maintenance of Scotland's trunk roads.

We are pleased to continue our strong, constructive working relationships with Transport Scotland and the OCs.

Performance at a glance

PAG has used a rating system to assist in benchmarking OC performance. These performance ratings have been applied throughout the Annual Report to reflect overall OC performance for the various areas reviewed. This performance at a glance table is a summary of these ratings and, where relevant, provides a comparison with OC performance in 2016/17.

Key:		Excellent		Performance better than last year	
		Good			Performance unchanged from last year
		Fair			Performance worse than last year
		Poor			Activity not reviewed in 2016/17
		Very Poor			

	NW	SW	NE	SE	FB
Chapter 2 Network management					
2.1 Network reliability					
2.1.2 Availability of the network to road users	=	=	=	=	=
2.2 Network safety					
2.2.1 Safety inspections and patrols	▲	=	▲	▲	▲
2.2.2 Detailed inspections - roads	▲	=	▲	▲	
2.2.3 Inspecting structures	▼	▼	=	▲	=
2.3 Inventory management					
2.3.1 RMMf	=	▲	=	=	N/A
2.3.2 SMS	=	=	=	=	=
2.3.3 Electrical assets	=		▲	▲	▲
2.4 Traffic Management	=	=	=	▲	=
2.5 Sustainability	▲	=	=	▲	=

Performance at a glance

	NW	SW	NE	SE	FB
Chapter 3 Network maintenance					
3.1 Cyclic maintenance					
<i>Grass cutting</i>	=	=	=	▲	▲
<i>Weed control</i>	=	=	▲	=	▲
<i>Soft landscaping</i>	▼	=	=	▲	▲
<i>Sweeping, cleansing and litter</i>	▼	=	▲	=	▲
<i>Drainage, gullies and ironwork</i>	=	=	=	▲	▲
<i>Signing, signals, road markings and studs</i>	▼	=	▲	=	=
<i>Structures</i>	=	=	=	▲	=
3.2 Reactive maintenance					
<i>Lighting</i>	=	=	▲	=	=
<i>Safety fences, barriers and fencing</i>	=	=	=	=	=
3.2.1 Repair of category 1 defects	=	=	=	=	▲
3.2.2 Incidents	▲	▲	▲	▲	=
3.2.3 Winter service					
<i>Winter readiness</i>	=	▲	▲	▼	▲
<i>Winter decision making</i>	▲	=	▲	=	=
<i>PI for winter service performance</i>	=	▲	=	=	=
<i>Management of salt stocks</i>	=	=	=	=	=
3.3 Planned maintenance					
3.3.2 Roads	=	=	=	▼	=
3.3.3 Structures	=	=	=	=	▼
3.4 Works contracts					
<i>Tender documents</i>		=	N/A	N/A	
<i>Supervision</i>	N/A	=	N/A		N/A

Performance at a glance

	NW	SW	NE	SE	FB
Chapter 4 Quality of service					
4.1 Management systems					
Quality management - rectifying non-compliance (PAG and internal)	=	▲	=	▲	▲
<i>Health and Safety management</i>	▲	=	=	▲	=
<i>Environmental management</i>	=	=	▲	▼	=
4.2 Continous Improvement	▲	=	▲	▲	▲
Chapter 5 Value of service					
5.1 Budgets, orders and spend					
<i>Budgetary control</i>	▼	=	=	=	=
<i>Orders v spend</i>	▲	▼	=	▼	=
5.2 Financial management					
5.2.1 Submission of financial information	▲	▲	=	=	=
5.2.2 General financial management	=	▲	▼	=	=
5.3 Commercial matters					
5.3.1 Measurement issues	=	▼	=	=	=
5.3.2 Claims	▲	▲	▲	▲	=

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Chapter 1

Overview

Background

The Scottish trunk road network

The network is divided into five geographic Units (NW, SW, NE, SE and FB) and four DBFO/PPP projects, each with its own contract (see Figure 1).

Each of the five Units (see Figures 1-02 to 1-05) is managed and maintained by an OC. Figure 1-01 outlines the structure of these arrangements.

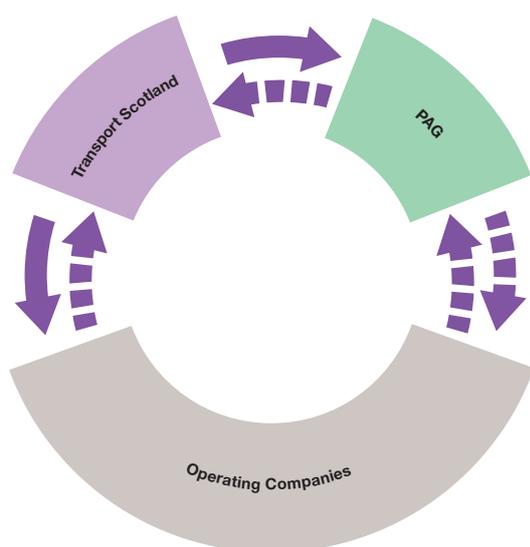


Figure 1-01 - Structure of arrangements between Transport Scotland, PAG and the OCs

The network is 3,135km long, excluding M6 DBFO, M77 PPP, M8/M73/M74 DBFO and M80 DBFO. It contains a total of 5,627 structures, including 1,909 bridges and footbridges.

The OC contracts

From 1 April 2013, the 4G contract in NW and SW have been managed and maintained by BEAR Scotland Ltd and Scotland TranServ (a joint venture between Balfour Beatty and WSP) respectively.

From 16 August 2014, the 4G contract in NE and SE have been managed and maintained by BEAR Scotland Ltd (an independent company jointly owned by Jacobs Engineering, Breedon Aggregates and Eurovia) and Amey respectively.

From 1 June 2015, the contract in FB has been managed and maintained by Amey. The current contract expiry date for this contract is May 2020.

The current contract expiry date for NW, SW, NE and SE contracts is August 2020.

The contracts' objectives

The contracts to manage and maintain the network were awarded by the Scottish Ministers, and focus on the following three objectives:

- Customer service – “to enable a ‘customer oriented’ approach to be further developed in the way roads are managed and maintained.”
- Value for money – “to achieve the maximum efficiency in the use of the substantial sums of money expended on the maintenance of the network.”
- Effective management – “to encourage innovation and skilful management to maximise trunk road capacity and achieve the best use of the network.”
- The contracts also aim to encourage:
- Flexibility – “to accommodate changes to the trunk road network.”

Performance ratings

PAG uses a star rating system to assist in benchmarking OC performance. These performance ratings have been applied throughout the report.

- ★★★★★ Excellent
- ★★★★☆ Good
- ★★★☆☆ Fair
- ★★☆☆☆ Poor
- ★☆☆☆☆ Very poor

A summary of these ratings reflect overall OC performance for the various areas reviewed and can be found in the ‘Performance at a glance’ section of this report. It should be noted that in the instance of a NNC or Remedial Notice being issued, scoring of the related section reduces to no higher than ‘fair’ or ‘poor’ respectively.

Chapter 1

Overview

North West fact file



Figure 1-02 - NW Unit

Managed and maintained by: BEAR Scotland Ltd.

BEAR's central office:
BEAR House
Inveralmond Road
Inveralmond Industrial Estate
Perth
PH1 3TW

Total route length of the network in NW: 1,422km
Number of structures: 2,425
Budget for maintaining trunk roads in NW this period: £49.3m

Chapter 1 Overview

South West fact file



Figure 1-03 - SW Unit

Managed and maintained by: Scotland TranServ.

Scotland TranServ's central office:

Oatlands House
150 Polmadie Road
Glasgow
G5 0HD

Total route length of the network in SW: 623km

Number of structures: 1,739

Budget for maintaining trunk roads in SW this period: £48.0m

Chapter 1

Overview

North East fact file



Figure 1-04 - NE Unit

Managed and maintained by: BEAR Scotland Ltd.

BEAR's central office:
BEAR House
Inveralmond Road
Inveralmond Industrial Estate
Perth
PH1 3TW

Total route length of the network in NE: 594km
Number of structures: 625
Budget for maintaining trunk roads in NE this period: £29.2m

Chapter 1

Overview

Forth Bridges fact file

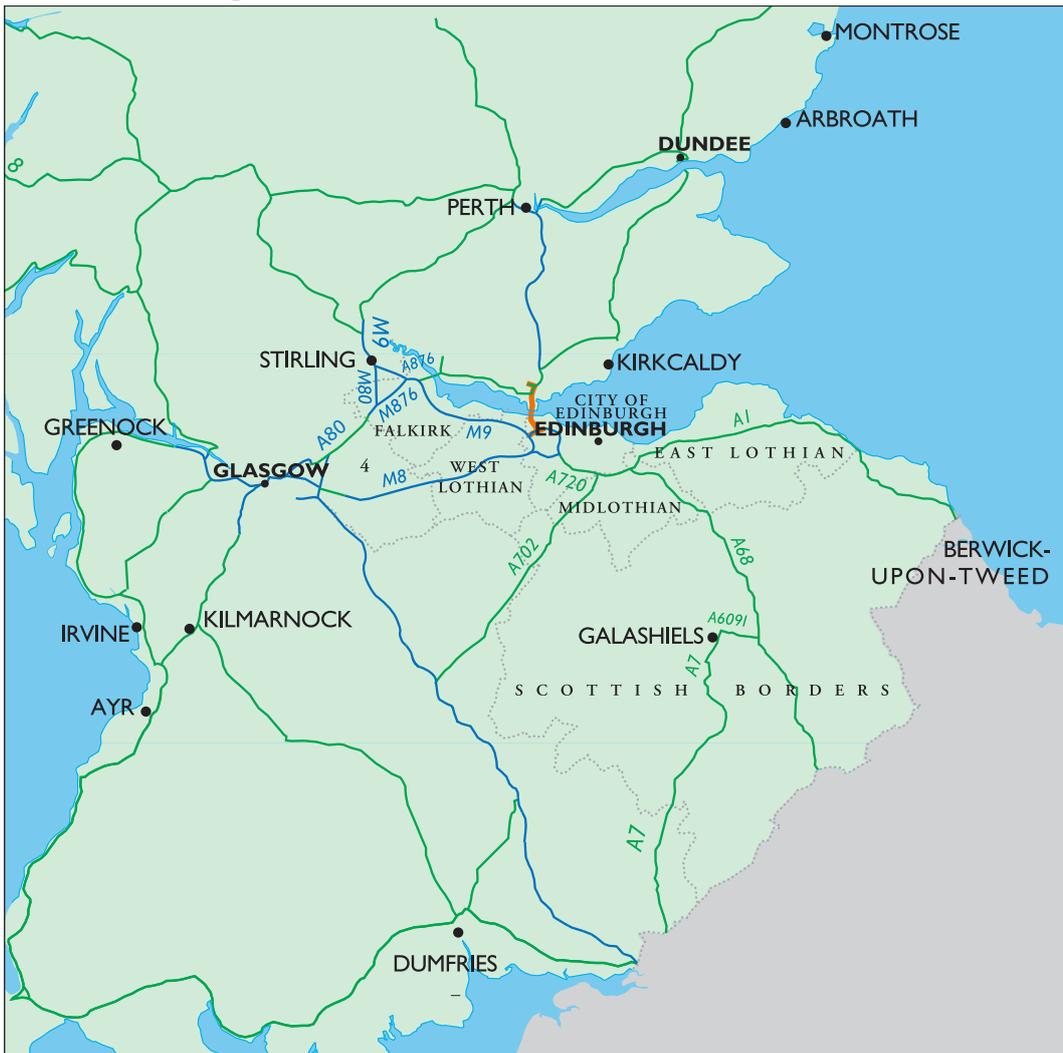


Figure 1-06 - Forth Bridges Unit

Managed and maintained by: Amey

Amey's central office for FB:
Forth Road Bridge
Administration Office
Ferrymuir Gait
South Queensferry
EH30 9SF

Total route length of the network in FB: 23km
Number of structures: 97
Budget for maintaining trunk roads in FB this period: £16.6m

Chapter 1 Overview

Network spend

Reported spend figures are inclusive of contract price fluctuations (CPF) unless otherwise stated.

A comparison of spend figures for 2016/17 and 2015/16 is shown in Figure 1-07. Total spend for 2016/17 was £179.3m (2015/16: £145.5m).

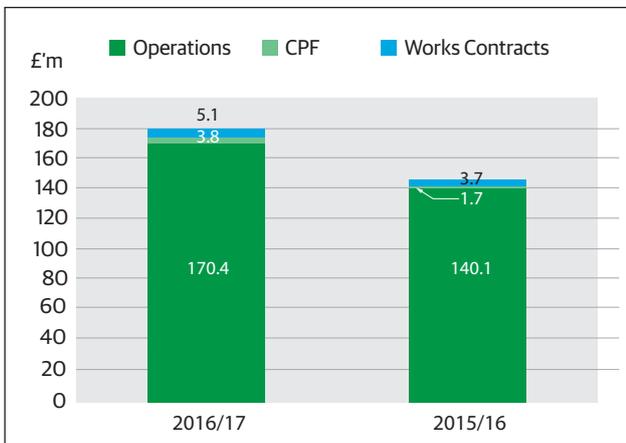


Figure 1-07 - Financial comparison - all Units

A profile of spend by Unit split between OC operations and works contracts is given in Figure 1-08.

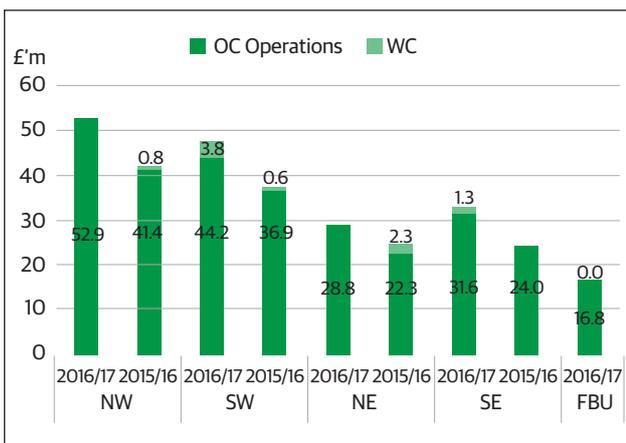


Figure 1-08 - Spend split by works and operations by Unit

The budget for 2016/17 of £176.4m (net of CPF) was up £32.8m (22.8%) from the previous year (see Figure 1-09). £13.5m of the increase relates to a specific Scottish Government investment in capital works.

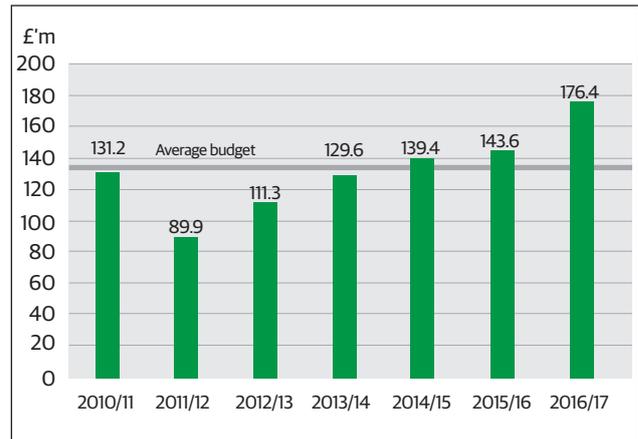


Figure 1-09 - Comparison of budgets (net of CPF) for maintenance and improvements

Spend net of CPF for 2016/17 was £175.5m (2015/16: £143.8m), which is £0.9m less than budget.

For 2016/17, CPF payments totalled £3.8m on operations priced at base rates totalling £170.4m, see Figure 1-07. The CPF figure for 2015/16 was £1.7m on operations priced at base rates totalling £140.1m. Figure 1-10 shows how these amounts are split across the Units.

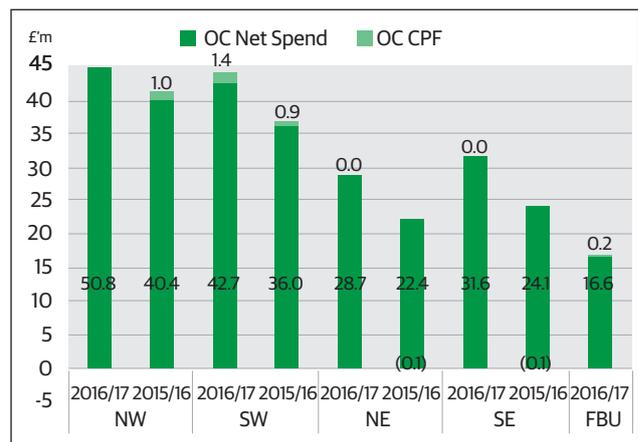


Figure 1-10 - OC spend split by base rates and CPF - all Units

Transport Scotland's 4G contracts have generated savings through competitive procurement process when compared to prices under its previous contracts for similar operations. Savings of £4.4m have been delivered during 2016/17, with cumulative savings of £24.7m delivered to date over the life of the 4G contracts.

Chapter 1 Overview

Spend analysis

Transport Scotland reports a network asset valued at a net £11.6bn for roads and £4.7bn for structures. In maintaining its asset, Transport Scotland spent £178.7m during 2016/17 (2015/16: £145.5m). Figure 1-11 shows how this spend was allocated by asset type during the year.

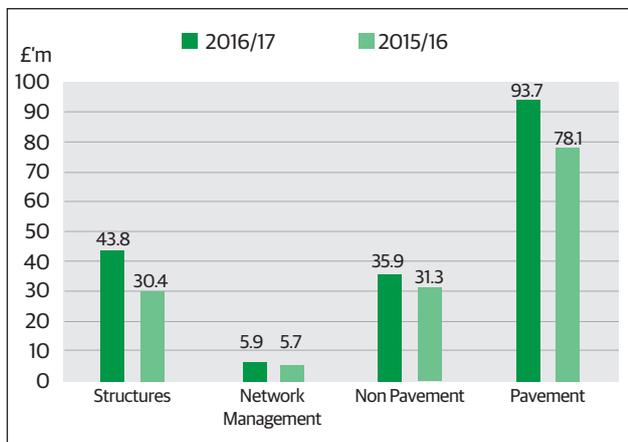


Figure 1-11 - Spend by asset type - all Units

The spend categories identified in Figure 1-11 are detailed below:

- Structures includes bridges, footbridges, underpasses, culverts, retaining walls, sign gantries, high mast lighting and CCTV masts.
- Network management includes core operation activities not directly attributable to structures, non-pavement and pavement assets.
- Non-pavement includes drainage systems, vehicle restraint systems, street lighting, traffic signs and other ancillary assets.
- Pavement includes only carriageways and footways.

Figure 1-12 shows spend by maintenance activity.

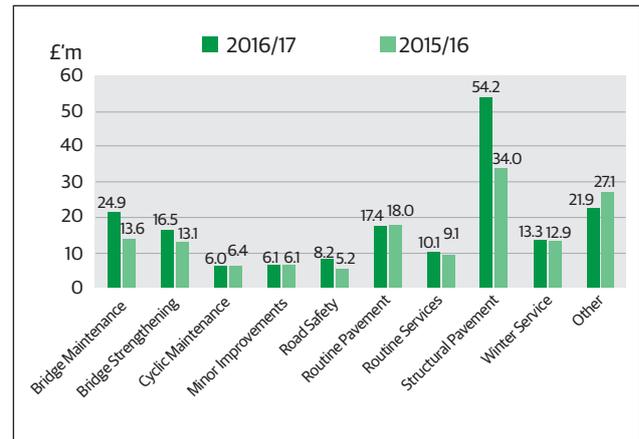


Figure 1-12 - Spend by maintenance activity - all Units

Chapter 2

Management of service

Key points

Network reliability

- The OCs' performance in minimising the delays and disruption to road users was excellent.
- Overall, 99.9% of the network was available to road users in 2016/17.
- In general, the OCs were correctly placing notices in the Scottish Road Works Register (SRWR) with only minor inconsistencies noted across the Units.

Network inspections

- In general, the OCs completed inspections on time, and problems identified in this report relate mainly to the OCs' performance at recording completed inspections within IRIS.
- Further improvement was achieved by NE, NW, SE and FB resulting in an excellent performance with respect to safety inspections.
- Improvement in performance to poor by NW, NE and SE on detailed inspections.
- NE, SE and FB successfully completed their structures inspections either within or ahead of programme, whereas NW and SW required extensions of time to complete their inspection programmes.

Inventory management

- Good performance by NW and NE with both making significant progress in inventory validation and condition rating.
- Some progress was made by SW in inventory validation and condition rating. The OC developed a programme of works and is progressing with agreed actions. There was only slight progress achieved by SE.
- FB has made good progress in inventory validation and condition rating.

Traffic management

- SE delivered significant improvement and NW, SW and NE performance in traffic management remained unchanged.

Sustainability

- NW, SW, NE and SE delivered good performance in implementing sustainable practices into their operations. Performance by FB was excellent.

Chapter 2

Management of service

2.1 Network reliability

Network reliability

The delivery of Transport Scotland's investment by the OCs is pivotal to a safe, efficient, reliable and sustainable network.

The OCs are required to minimise the potential disruption and inconvenience to road users caused by essential maintenance by planning works, combining activities, and coordinating with all stakeholders, including statutory undertakers.

2.1.1 Coordinating roadworks

In 2016/17, there were 18,699 roadworks sites across the network, an average of 51 per day (52 per day in 2015/16). Figure 2-01 shows the number of roadworks sites in each Unit during the year.

Unit	Number of roadworks sites
NW	6,432
SW	4,071
NE	4,682
SE	3,022
FB	492

Figure 2-01 - Number of roadworks sites in 2016/17 (source Traffic Scotland Automated Diary Facility)

Various measures are put in place by the OCs to reduce disruption and maintain network availability and safety during roadworks. These include:

- Traffic management measures such as contraflows, use of temporary vehicle restraint systems, lateral safety zones and convoy working
- Advance notice of roadworks using TV, radio and press media campaigns, variable message signs and social media
- Increased stakeholder consultation
- Communication on road closures
- Road closures with agreed diversion routes.

2.1.2 Availability of the network for road users

- all Units ★★★★★

The OCs' performance in minimising the impact of roadworks is measured as a monitoring indicator (MI). This is based on the length and time of lane closures in each Unit. These road occupation values are used to calculate the overall percentage of the network available to road users. This is related to budget and planned maintenance activities that require network intervention to undertake.

All Units maintained excellent performance in keeping the network open (see Figure 2-02).

Unit	% Available
NW	99.998%
SW	99.994%
NE	99.979%
SE	99.985%
FB	99.935%
Average	99.978%

Figure 2-02 - MI reporting road occupations and percentage of network available to road users

2.1.3 Scottish Road Works Register

The Scottish Road Works Commissioner was established under the Transport (Scotland) Act 2005 to oversee the planning and coordination of works on Scotland's roads by all roads authorities and statutory undertakers. The SRWR is a database used by all roads authorities and statutory undertakers to register and coordinate all proposed work. It is also used to monitor reinstatement, supervision and road work history. Every public road in Scotland is included in the SRWR. The Scottish Road Works Commissioner is the Keeper of the SRWR.

The OCs have responsibility for:

- checking all trunk road information is accurate
- coordinating the execution of works affecting the trunk roads and monitoring the performance of undertakers in fulfilling the relevant legislative requirements
- registering their own works in accordance with the appropriate legislation.

Chapter 2

Management of service

In general all OCs were found to be issuing notices of roadworks to the SRWR. Monitoring activities carried out during the reporting period found inconsistencies in some NE and SE site location descriptions. Incorrect dates were also found in NE and SW data.

The monitoring activity will continue in 2017/18 to ensure road works are being accurately populated onto SRWR.

2.1.4 Abnormal loads

Abnormal load movement is one of the network management tasks which is delegated to the OCs. Each OC provides an abnormal load routing and coordination service within its Unit and liaises with hauliers and other statutory bodies. This is a reserved matter.

One of the key aspects of the service is assessing the suitability of bridges and other structures on the network to carry heavy loads, as well as the suitability of routes to carry wide or long loads.

In 2016/17, the five OCs approved 243 special order abnormal load applications (in 2015/16, the five OCs approved 598 applications) (see Figure 2-03).

Unit	2016/17
NW	35
SW	19
NE	26
SE	148
FB	15
Total	243

Figure 2-03 - Special order abnormal load applications

2.1.5 High loads

Unlike abnormal load movement, high loads are not specifically covered by legislation.

All OCs continued to undertake assessments, sign reviews and identify mitigation measures at high risk sites, such as low operational rail bridges over trunk roads. Low bridges are

defined as having less than 16'6" (5.03 metres) clearance and require to be signed with the height of the highest vehicle permitted to pass under them.

Transport Scotland published guidance on its website, as well as the "High Load Grid", however, this has now been withdrawn. Hauliers have been advised to contact Transport Scotland directly for guidance on high load movements.

It is expected the "High Load Grid" will be reinstated to the Transport Scotland website with an interactive mapping tool in 2017/18. The number of bridge strike incidents across the network has remained low, with six recorded strikes in 2016/17.

2.2 Network inspections

Inspections

To deliver reliable journey times, ensure safety of the network and ensure budgets are allocated to areas of most need, the OCs are required to implement inspection regimes.

Weekly safety inspections/patrols are carried out on routes to identify and repair the most serious defects quickly.

To maintain the safe condition of the trunk road assets, detailed inspections are carried out, typically annually, to identify minor defects. These defects are grouped into schemes, which are prioritised based on need.

2.2.1 Safety inspections and patrols

In general, the OCs completed inspections on time.

Figure 2-04 gives the OCs' performance in completing safety inspections on time.

Unit	2015/16	2016/17
NW	98.0%	98.8%
SW	97.1%	95.6%
NE	97.8%	97.8%
SE	98.8%	99.6%
FB	96.4%	99.3%

Figure 2-04 - Safety inspection performance

Chapter 2

Management of service

NW – BEAR ★★★★★

Overall, BEAR's performance increased from good to excellent.

Overall, 98.7% of safety inspections and patrols were recorded as being completed on time. This comprised of 99.8% of safety inspections and 97.5% of night time safety patrols.

PAG noted issues with some of the night time safety patrol figures which appeared to be different from IRIS, this was due to changeover in the inspection regime from winter to summer.

SW – Scotland TranServ ★★★★★☆

Scotland TranServ's performance remained good.

Overall, 95.6% of safety inspections and patrols were recorded as being carried out on time. This included 98.2% of safety inspections, 89.3% of safety patrols and 95.8% of night time safety patrols completed on time.

NE – BEAR ★★★★★

Overall, BEAR's performance increased from good to excellent.

Overall, 98.0% of safety inspections and patrols were recorded as being completed on time. This comprised 97.4% of safety inspections, 98.8% of safety patrols and 94.3% of night time safety patrols completed on time.

PAG noted a number of discrepancies between figures reported by the OC and recorded in IRIS throughout the year due to the changeover in the inspection regime from winter to summer.

SE – Amey ★★★★★

Overall, Amey's performance increased from good to excellent.

Overall, 99.5% of safety inspections and patrols were recorded as being completed on time. This comprised 99.6% of safety inspections, 99.8% of safety patrols and 99.0% of night time safety patrols completed on time.

FB – Amey ★★★★★

Amey's performance increased from good to excellent.

Overall, 99.3% of safety inspections and patrols were recorded as being completed on time. This comprised of 99.4% of safety

inspections, 100.0% of safety patrols and 98.9% of night time patrols completed on time.

2.2.2 Detailed inspections – roads

During the reporting period, the OCs identified technical difficulties when uploading detailed inspection figures relating to electrical assets into IRIS. This had a negative impact on the OCs reported performance. Pending resolution of these issues the OCs were asked to remove the electrical assets requiring inspection from the total number of inspections during the latter part of the period. The performance by the OCs in completing detailed inspections in 2016/17, is as shown in Figure 2-05.

Unit	2015/16	2016/17
NW	61.0%	70.7%
SW	75.5%	78.7%
NE	47.5%	80.5%
SE	50.3%	77.3%
FB	47.2%	69.7%

Figure 2-05 – OC performance in completing detailed inspections (excluding electrical inspections)

In general, the OCs completed their inspections on time and any problems identified in this report relate to the OC's performance at recording completed inspections within IRIS.

NW – BEAR ★★☆☆☆

Overall, BEAR's performance improved from very poor to poor during 2016/17 with 70.7% of the required detailed inspections carried out on time.

The notice of non-conformance (NNC) raised in January 2014 was closed in July 2016.

PAG noted that BEAR raised concerns due to the accuracy of the inventory, issues with recording data in IRIS and issues in calculating performance measurement in IRIS.

Transport Scotland and PAG will continue to work closely with the OC to establish how performance will be further improved during 2017/18.

Chapter 2

Management of service

SW – Scotland TranServ ★★☆☆☆

Overall, Scotland TranServ's performance remained poor throughout 2016/17 with only 78.7% of the required detailed inspections carried out on time. This was a slight improvement from 2015/16 when 75.5% was achieved.

PAG noted that there were issues with discrepancies between OC figures for detailed inspection and those reported through IRIS.

PAG will continue to work closely with the OC to establish how performance will be further improved during 2017/18.

NE – BEAR ★★☆☆☆

Overall, BEAR performance increased from very poor to poor with only 80.5% of the required detailed inspections recorded as being carried out. This was a significant improvement from 2015/16 when 47.5% was achieved, however, this is still well below the threshold level.

Throughout the period there were discrepancies identified in IRIS.

PAG will work closely with the OC to establish how performance will be further improved during 2017/18.

SE – Amey ★★☆☆☆

Overall, the performance by Amey increased from very poor to poor with only 77.3% of the required detailed inspections carried out on time. This was a significant improvement from 2015/16 when 50.3% was achieved, however, this figure is still well below the threshold level.

PAG will work closely with the OC to establish how performance will be further improved during 2017/18.

FB – Amey ★★☆☆☆

Overall, the performance by Amey was poor with only 69.7% of the required detailed inspections recorded as being carried out on time. This was a significant improvement from 2015/16 when 47.2% was achieved, however, this figure is still well below the threshold level.

PAG will work closely with the OC to establish how performance will be improved during 2017/18.

2.2.3 Inspecting structures

Maintaining structures

The OCs are required to inspect structures at regular pre-determined intervals and prepare programmes to manage and maintain them. The OCs must then design, procure and carry out works either directly or through tendered works contracts.

The term 'structures' includes bridges, footbridges, underpasses, culverts, retaining walls, sign gantries, high mast lighting and CCTV masts. Regular inspections are carried out at two and six-yearly intervals.

The OCs are also required to carry out cyclic maintenance tasks to structures each year.

The OCs have an obligation to inspect all structures within their respective Units. The inspection year generally runs from February to November in each calendar year.

Two types of inspections are routinely undertaken:

- General inspection – visual inspections carried out every two years
- Principal inspection – close detailed visual inspection of every structural element carried out every six years.

Other inspections may be carried out on a needs basis. These may include superficial, scour or special inspections, usually following severe weather, sudden or unknown change in condition or following an incident.

Inspections enable the current condition and any defects to be recorded in the Structures Management System (SMS). Based on inspections, each OC develops a programme of prioritised essential maintenance proposals within the available budget.

A breakdown of the inspections completed by Unit, and the overall performance of each OC is shown in Figure 2-06.

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Unit	Principal Inspections	General Inspections	Completed on time
NW	235	459	98%
SW	388	350	93%
NE	95	102	100%
SE	132	177	100%
FB	12	19	100%
Total	862	1107	98%

Figure 2-06 – OC performance in completing principal and general inspection programmes

NW – BEAR ★★★★★☆

Performance by BEAR reduced to good. A small number of principal inspections were not completed on time.

SW – Scotland TranServ ★★☆☆☆☆

Overall, performance by Scotland TranServ reduced from fair to poor.

All general inspections were completed to programme. However, a significant number of principal inspections (50) were not completed by the contractual deadline and a remedial notice was issued to Scotland TranServ.

Transport Scotland required the OC to complete the outstanding principal inspections within an extended period. The OC completed the work and the remedial notice was closed.

NE – BEAR ★★★★★★

BEAR maintained excellent performance, with 100% of the principal and general inspection programmes completed on time.

SE – Amey ★★★★★★

Performance by Amey increased to excellent.

The OC completed 100% of the principal and general inspection programme on time.

FB – Amey ★★★★★★

Performance by Amey remained excellent. The OC completed 100% of the principal and general inspection programme on time.

2.3 Inventory management

2.3.1 Routine maintenance and management function (RMMf)

The RMMf is a computer-based system provided by Transport Scotland and operated by the OCs, which contains the inventory of trunk road assets. The OCs are responsible for recording all works carried out on the network and updating and archiving the inventory as necessary. The accuracy of the inventory is important as data is used to assist and establish budgets and programmes.

NW – BEAR ★★★★★☆

BEAR's performance remained good.

BEAR completed the first round of inventory validation and condition rating. However, the next annual review has not started resulting in a gradual decrease in performance figures. The potential reduction in frequency of the condition rating is currently under discussion with Transport Scotland.

SW – Scotland TranServ ★★☆☆☆☆

Scotland TranServ's performance improved to poor.

Scotland TranServ made some progress with inventory validation and condition rating. A non-conformance issued in April 2014 was closed in March 2017 with the issue being further escalated to remedial notice. The OC developed a programme of works and is currently progressing with the agreed actions.

PAG will work closely with the OC to establish how performance will be further improved during 2017/18.

NE – BEAR ★★★★★☆

BEAR's performance remained good.

The OC made considerable improvement in inventory validation and condition rating with activities completed to the agreed program.

SE – Amey ★★☆☆☆☆

Amey's performance remained poor with slight progress being made in inventory validation and condition rating. A remedial

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notice issued in the previous reporting period for a number of issues relating to IRIS remains open.

PAG will continue to work closely with the OC to establish how performance will be improved during 2017/18.

FB – Amey (N/A)

The OC has made good progress in relation to inventory validation and condition rating. However, a full assessment of performance will only be possible once the sections of the Unit currently controlled by the Queensferry Crossing contractor are transferred to Amey.

2.3.2 Structures management system (SMS)

During 2016/17, the OCs were responsible for managing 5,627 structures on behalf of Transport Scotland. These are recorded in SMS.

Structures range from gantries carrying advisory signs to major structures such as A90 Forth Road Bridge, A985 Kincardine Bridge, M8 Kingston Bridge and A898 Erskine Bridge.

Of these structures, 1,909 are bridges or footbridges. Small pipes and culverts are not classed as structures and are not subject to the full inspection regimes applied to structures.

A breakdown of the type and number of structures in each Unit, as extracted from SMS, is shown in Figure 2-07.

Unit	Bridges	Foot-bridges	Other Structures
NW	616	64	1,745
SW	510	49	1,180
NE	289	15	321
SE	314	14	413
FB	36	2	59
Total	1,765	144	3,718

Figure 2-07 – Number and type of structures in each Unit (source SMS)

NW – BEAR ★★★★★☆

BEAR's performance in uploading information and updating the inventory in SMS continued to be good. PAG noted some health and safety files were uploaded to the incorrect inventory.

In addition, scour assessment data was not always being updated in the system.

SW – Scotland TranServ ★★★★★☆

Overall, the OC's performance in uploading information and updating the inventory in SMS remained fair. Some issues were identified with Damage to Crown Property not being updated in SMS.

The OC was slow to compile and upload a number of major bridges reports.

PAG will continue to monitor this activity closely in 2017/18.

NE – BEAR ★★★★★☆

BEAR continued its good performance in relation to uploading information and updating the inventory in SMS. The OC was slow to complete and upload certificates for M90 Friarton Bridge.

SE – Amey ★★★★★☆

In general, the OCs performance continued to be fair in relation to uploading information and updating the inventory in SMS.

PAG will continue to monitor this activity closely in 2017/18.

FB – Amey ★★★★★☆

In general, the OCs performance continued to be good in relation to uploading information and updating the inventory in SMS. Works associated with the construction of the Queensferry Crossing affected the availability of some structures for inspections.

2.3.3 Electrical assets

All the OCs are required to inspect, on a five-yearly cycle, all electrical assets across the trunk road network. In addition, the 4G contract requires 20% to be completed each year. Furthermore the 4G contract requires the OCs to verify the accuracy of the inventory within the first six months of the contract.

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NW – BEAR ★★☆☆☆

BEAR's performance remained fair.

BEAR condition ratings recorded in IRIS represent only 43.79% of all lighting points (1,829/4,177) and 56.88% of all traffic signals (219/385) within the Unit.

Several ORIs were raised relating to electrical assets during the year.

PAG will continue to monitor this activity closely to establish how performance will be improved in 2017/18.

SW – Scotland TranServ ★☆☆☆☆

Scotland TranServ's performance remained very poor.

The OC carried out inventory condition rating on 8.66% of all lighting points (709/8,184) and 26.09% of all traffic signals (108/414) within the Unit.

A significant number of ORIs were raised relating to electrical assets throughout the year.

Transport Scotland and PAG will continue to work closely with the OC to establish how performance will be improved during 2017/18.

NE – BEAR ★★☆☆☆

BEAR's performance improved from fair to good.

BEAR condition ratings recorded in IRIS represent only 33.63% of all lighting points (1,726/5,133) and 32.87% of all traffic signals (515/1,567) within the Unit.

A few ORIs were raised relating to electrical assets during the year.

SE – Amey ★★☆☆☆

Amey's performance improved from poor to fair.

The OC carried out inventory condition rating on 39.96% of all lighting points (1,368/3,423) and 18.97% of all traffic signals (37/195) within the Unit.

A total of two ORIs were raised relating to electrical assets during the year.

PAG will monitor this activity closely to establish how performance will be improved in 2017/18.

FB – Amey ★★★★★

Amey's performance improved to excellent.

The OC carried out inventory condition rating on 98.77% of all lighting points (160/162) and 100% of all traffic signals (13/13) within the Unit.

No ORIs were raised relating to electrical assets during the year.

2.4 Traffic management

NW – BEAR ★★☆☆☆

In general, BEAR's performance remained fair.

Three ORIs and two hazard notices were raised for non-compliant traffic management at OC sites. The two hazard notices were raised for OC's works related to lack of appropriate lateral or longitudinal safety zone.

PAG will continue to monitor this activity closely to establish how performance will be improved in 2017/18.

SW – Scotland TranServ ★★★★★

Overall, Scotland TranServ's performance remained good.

Five ORIs and two hazard notices were raised for non-compliant traffic management at OC sites. The two hazard notices were for a damaged third party manhole cover marked with insufficient cones and for lack of appropriate lateral or longitudinal safety zone.

PAG will monitor this activity closely to establish how performance will be improved in 2017/18.

NE – BEAR ★★☆☆☆

In general, BEAR's performance remained good.

Two hazard notices were raised for non-compliant traffic management, both for lack of lateral safety zone (one related to third party activities).

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SE - Amey ★★★★★

Overall, Amey's performance significantly improved from fair to excellent.

A NNC from the previous year was closed in April 2016.

FB - Amey ★★★★★

Overall, Amey's performance remained excellent.

2.5 Sustainability

Sustainability monitoring

The Scottish Government has set a target to reduce carbon emissions by 42% by 2020 and by at least 80% by 2050.

Transport Scotland, PAG and the OCs continue to work together to provide a more sustainable service and to assist in achieving these ambitious carbon reduction targets. The CEEQUAL based sustainability monitoring tool developed by PAG continues to be used to determine the OCs performance when planning, designing and completing approved schemes. In addition, a number of site visits and depot inspections were undertaken by PAG.

Waste generation and management and the use of reused, recycled and renewable materials continues to be monitored. The manner in which the quantities of waste and use of recycled materials is recorded and reported was reviewed by both PAG and Transport Scotland with a more consistent approach adopted.

During the period, BEAR and Amey applied for an award under the Term Contract Version of CEEQUAL, the sustainability assessment, rating and awards scheme for civil engineering, infrastructure, landscaping and works in public spaces. Both OCs provided CEEQUAL with information to allow initial assessment to be carried out.

In December 2016 SEPA's National Waste Unit gave approval to BEAR for material that has been excavated from ditches to be deposited next to the drain on the provision of BEAR obtaining a paragraph 25 exemption from SEPA.

NW - BEAR ★★★★★☆

BEAR's performance improved from fair to good.

PAG carried out a depot inspection and completed a number of scheme sustainability monitoring reviews during the period.

On average the OC scored 96% for its sustainability reviews and mitigation implementation.

Two ORIs were raised during the year relating to lack of pollution prevention on site and ditch arisings being side cast and deposited on the roadside verge.

Case Study provided by BEAR NW

Ditch Cleaning

Silt which has accumulated in roadside ditches regularly requires to be removed from the ditch to ensure the free flow of rain and ground water. In the North West Unit this is a considerable task as open roadside ditches are the predominant drainage detail.

This silt material is normally considered to be a wet waste which requires re-watering off-site and disposal to landfill. In the North West Unit the vast geographic area, rural nature and the lack of local disposal sites makes this a very unsustainable practice.

It was noted that Schedule 1 of the Waste Management Licencing (Scotland) Regulations 2011 sets out the activities that do not require a Waste Management Licence. Paragraph 25 notes that the deposit of waste arising from public drainage systems is exempt from Waste Management Licence requirements. Following close liaison with SEPA it was agreed that this encompasses roadside ditches and arisings from them.

A procedure was then agreed whereby in certain circumstances the silt could be deposited behind the ditch and once dry, raked and grass seeded.

The process was trialled (see Figure 2-08 - 2-09) and on completion given the green light by SEPA, PAG and Transport Scotland. The benefits are reduced vehicle emissions, reduced disposal quantities and cost to Transport Scotland and improved efficiency of operation.

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Figure 2-08 – Ditch cleaning trial before (supplied by BEAR)



Figure 2-09 – Ditch cleaning trial after (supplied by BEAR)

SW – Scotland TranServ ★★☆☆☆

Scotland TranServ's performance remained good.

PAG completed a number of scheme sustainability monitoring reviews during the period.

On average the OC scored 93% for its sustainability reviews and mitigation implementation.

Scotland TranServ had applied most mitigation measures required. Issues discovered during the PAG inspections related to site machinery parked on soft verges. In addition, there was an isolated case with lack of debris netting installed.

During the year one ORI was raised relating to various unlabelled fuel containers found in a site pick-up vehicle and one hazard notice for a Scotland TranServ sub-contractor vehicle containing 100 litres of diesel fuel in unsecured/unlabelled containers. The OC took proactive action to ensure that situations like this do not reoccur.

NE – BEAR ★★☆☆☆

BEAR's performance was again good.

PAG completed a number of scheme sustainability monitoring reviews during the period.

On average the OC scored 81% for its sustainability reviews and mitigation implementation.

BEAR had applied most mitigation measures. Issues discovered during the PAG inspections included lack of evidence for on-site monitoring of environmental mitigation measures, site vehicles parked on soft verges, gullies not bunded and waste transfer notes not being provided timeously.

SE – Amey ★★☆☆☆

Amey's performance improved from fair to good.

PAG carried out a depot inspection and completed a number of scheme sustainability monitoring reviews during the period.

On average the OC scored 94% for its sustainability reviews and mitigation implementation.

Amey had applied most mitigation measures. Issues discovered during the PAG inspections included lack of evidence for on-site monitoring of environmental mitigation measures and no evidence of material sourcing provided.

FB – Amey ★★★★★

Amey's performance was again excellent.

PAG completed a number of scheme sustainability monitoring reviews during the period.

The OC scored 100% for all its sustainability reviews and mitigation implementation.

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Amey had applied mitigation measures effectively on site. One minor issue with the population of waste transfer notes was found.

2.6 Construction Design Management (CDM)

CDM

The change in the CDM regulation in 2015 put new responsibilities on all parties and in particular the Client to monitor the compliance of others in the performance of their duties. The new regulations applied to all works after October 2015 and the OC's were tasked with performing the duties of the Principal Designer/Principal Contractor ensuring that the Clients duties were fully discharged (but without taking legal liability).

CDM monitoring undertaken by PAG intended to confirm whether OC's are complying with the legislation and their contractual obligations to upload information to IRIS.

In general all CDM documentation for sample schemes was uploaded within IRIS and reviewed on a monthly basis, inconsistencies, missing dates and documents were found in schemes from each Unit.

Site sample monitoring generally found good compliance with legislative requirements.

PAG monitoring will continue in 2017/18 to ensure documentation is being accurately uploaded and filed to IRIS and implemented during site operations and that all parties continue to comply with their legislative duties.

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Key points

Cyclic maintenance

- Excellent performance in grass cutting by SW and FB with good performance by NW, NE and SE.
- Excellent performance by FB and good performance by NW, SW, NE and SE in weed control.
- Excellent performance in dealing with drainage issues by FB with fair by SE and poor by all other OCs.
- Good performance by FB, fair by SE and NE in signs, road markings and road studs. Performance was poor by SW and very poor by NW.
- Structures cyclic maintenance performance by SE and FB was good and in NW and NE was fair. SW was poor.

Reactive maintenance

- While all OCs dealt timeously with lighting outages across the network, the issuing of ORIs, NNCs and Remedial Notices resulted in a range of performances from excellent in FB to poor in SW.
- The OCs, and in particular FB, performed well in repairing safety fences, barriers and fencing apart from SE where performance was poor.
- FB performed well in repairing category 1 defects. NW, NE and SE managed to significantly reduce the number of defects in the backlog open beyond the permanent repair period with a significant increase noted in SW.
- Excellent performance in incident response by NW and FB with good performance by all other OCs.

Planned maintenance

- SW, NE and FB delivered planned maintenance on roads to an excellent standard; NW was good and SE fair.
- Good performance in NW and FB, fair in SW and SE. Overdue documents and cost estimates for several planned schemes resulted in remedial notice and poor performance in NE.

Works contracts

- For FB, preparation of tender documents was good and in NW and SW fair. There were no tender documents submitted by NE and SE.
- SW delivered an excellent standard and SE a good standard of supervision on works contracts.
- No works contracts recorded for NW, NE or FB during the period.

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3.1 Cyclic maintenance

Cyclic maintenance

The OCs carry out various cyclic maintenance activities on the network in order to keep it operational, safe and tidy. These include operations such as cleaning gullies and catchpits, cutting grass and cleaning road signs.

The OCs are required to update RMMf when they carry out these operations.

Grass cutting

NW – BEAR ★★☆☆☆

Overall, BEAR's performance remained good.

Grass cutting operations were carried out according to the agreed programme.

Eight ORIs issued for areas being out with the specification were dealt with by the OC in a timely manner.

SW – Scotland TranServ ★★★★★

Overall, Scotland TranServ's performance remained excellent.

Grass cutting operations were carried out to the agreed programme.

Only four ORIs were raised for grass height exceeding maximum specification height.

NE – BEAR ★★☆☆☆

Overall, BEAR's performance remained good.

Throughout the grass cutting season, the OC generally had an excellent performance. However, in June 2016 the PI value deteriorated to 76%. In addition, four ORIs were issued by PAG.

SE – Amey ★★☆☆☆

Overall performance improved from fair to good.

Grass cutting was completed to specification and on programme throughout the season resulting in only a few minor issues.

Nine ORIs were issued by PAG during the reporting period.

FB – Amey ★★★★★

Overall the OC's performance improved from good to excellent.

Performance indicators for grass gutting were continuously met throughout the season, with all cuts meeting specification.

Only one ORI was issued by PAG during the reporting period.

Weed control

NW – BEAR ★★☆☆☆

Overall a good performance was maintained by BEAR.

Weed treatment operations were carried out to the agreed programme. Five ORIs were raised by PAG for weed growth on central reserves and verges but generally the OC maintained a good standard in weed control.

SW – Scotland TranServ ★★★★★

Scotland TranServ's performance remained good.

Weed control operations were carried out to the agreed programme.

Five ORIs were issued by PAG during the reporting period.

NE – BEAR ★★☆☆☆

Overall performance improved from fair to good.

Generally dieback of weeds was observed on most routes during the summer months. Weeds in the central reserves and filter drains on A9 Keir roundabout to Broxden roundabout, on A96 Inverness to Aberdeen and A92 Crossgates to Bankhead roundabouts were programmed for additional treatment.

PAG issued nine ORIs throughout the period one of which was open for longer than a month impacting on the performance.

SE – Amey ★★☆☆☆

Amey maintained a good performance.

The OC commenced weed spraying operations a week earlier than in previous seasons to help ensure a good overall standard. The visual amenity of weed dieback appeared to have improved

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significantly compared to previous seasons with a few minor issues noted.

Nine ORIs were issued by PAG during the reporting period.

FB - Amey ★★★★★

Overall the OC's performance improved from good to excellent.

Amey provided an excellent service with respect to weed control throughout the Unit.

Soft landscaping

NW - BEAR ★★☆☆☆

Overall, BEAR's performance reduced from fair to poor.

A total of 153 ORIs were issued concerning soft landscaping, a significant number relate to vegetation obscuring regulatory and warning signs, branches overhanging footpaths and vegetation growth encroaching safety fences. These ORIs were generally dealt by the OC timeously.

PAG will work closely with the OC to establish how performance will be improved during 2017/18.

SW - Scotland TranServ ★★★★★

Scotland TranServ's performance remained good.

A total of 59 ORIs were issued concerning soft landscaping, some of which related to obscuration of regulatory and mandatory signs.

NE - BEAR ★★★★★

Overall performance remained good.

A total of 21 ORIs were issued for obscured signs.

SE - Amey ★★★★★

Performance improved from fair to good.

A total of 41 ORIs were issued concerning soft landscaping. Throughout the summer months issues concerning obscured traffic signs were noted by PAG. The OC undertook significant tree felling operations throughout the year, particularly on A720

Edinburgh City Bypass to improve sight lines for Traffic Scotland live traffic cameras.

FB - Amey ★★★★★

Performance improved from good to excellent.

No ORIs were raised for soft landscaping issues. The OC implemented a programme of patrols in early summer to identify areas of concern and programmed strimming works to mitigate issues encountered.

Litter picking

Responsibility for litter picking on the trunk road network, excluding motorways and special roads rests with the local authorities.

Each OC is required to issue its grass cutting programme to relevant local authorities. This is intended to ensure an integrated approach to cutting grass and litter picking. If litter is not removed prior to grass being cut, it is shredded by grass cutting equipment. Shredding of litter makes removing it more difficult.

If a local authority is deficient in its litter picking duties, the OCs are responsible for contacting the local authority to highlight their concerns.

In April 2013, Transport Scotland established a protocol which set out the process the OCs should follow for sweeping carriageway channels where local authorities had failed to undertake their responsibilities. This entails the OC identifying any local authority failings to Transport Scotland who may then order the OC to undertake such work in place of the local authority.

Sweeping, cleansing and litter

NW - BEAR ★★☆☆☆

Overall BEAR's performance reduced from good to fair.

A total of 18 ORIs were raised for sweeping, cleansing and litter operations.

The OC continued to communicate issues regarding litter collection and sweeping with the respective local authorities.

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PAG will monitor this activity closely to establish how performance will improve in 2017/18.

SW – Scotland TranServ ★★☆☆☆

Overall, Scotland TranServ's performance remained fair.

PAG raised a total of 37 ORIs relating to graffiti and litter on routes where the OC have responsibility.

PAG will continue to monitor this activity closely to establish how performance will be improved in 2017/18.

NE – BEAR ★★☆☆☆

Overall performance improved to good.

Although cleaning operations were witnessed across the network PAG raised a total of four ORIs which impacted on performance.

SE – Amey ★★☆☆☆

Amey's performance remained fair.

PAG raised a total of 53 ORIs for sweeping cleansing and litter operations.

Litter accumulations, although generally small in number were a common occurrence on A720 and A1, particularly at lay-bys. Issues with graffiti on bridge structures have also been noted by PAG.

PAG will continue to monitor this activity closely to establish how performance will be improved in 2017/18.

FB – Amey ★★☆☆☆

The OCs performance improved from good to excellent, with PAG raising only three ORIs during the period.

The OC developed an excellent programme for sweeping, cleansing and litter picking ensuring that there were no unsightly accumulations.

Drainage, gullies and ironworks

NW – BEAR ★★☆☆☆

Overall, BEAR's performance remained poor.

A total of 126 ORIs were raised during the period.

A NNC issued in May 2015 for management of flooding defects was closed in July 2016. A number of issues relating to the management of flooding defects were noted. PAG carried out multiple reviews of flooding defects in RMMf where defects were noted to be incorrectly classified or recorded. Many of the flooding defects found in RMMf were unable to be matched with defects in the Management of Incidents (MoI) database.

The OC has amended its processes to address issues encountered and is now utilising a drainage strategy to prioritise drainage works, identify risks and complete appropriate actions for improvement.

Transport Scotland and PAG will work closely with the OC to establish how performance will be improved during 2017/18.

SW – Scotland TranServ ★★☆☆☆

Scotland TranServ's performance remained poor.

A number of issues relating to drainage, gullies and ironwork were noted resulting in a total of 61 ORIs being raised by PAG. These included failure to upload and/or submit flood reports within the contractual timescales, damaged gully covers and cracking around ironwork. It has been noted that the OC put measures in place to mitigate the issue relating to flooding reports and an improvement was seen towards the end of the year.

PAG will continue to work closely with the OC to establish how performance will be improved during 2017/18.

NE – BEAR ★★☆☆☆

Overall performance remained poor with a total of 28 ORIs raised.

The OC failed to address defects in a timely manner leading to a backlog which subsequently impacted on performance. Additionally, two hazard notices were issued in September and November 2016 for a missing gully cover and flooding. A NNC relating to the recording of flooding defects issued 27 July 2015 remained open at the end of the reporting period.

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In order to mitigate these issues, the OC has developed a drainage strategy to identify key problem areas, prioritise works and assist in implementing appropriate improvements.

PAG will continue to work closely with the OC to establish how performance will be improved during 2017/18.

SE - Amey ★★☆☆☆

Overall, Amey's performance improved from poor to fair.

A total of 60 ORIs were raised of which a significant number were for broken or damaged manhole covers and gully gratings. The OC carried out repairs within contractual timescales.

The OC carried out significant repairs throughout the Unit. An improvement was noted in regard to gully maintenance works scheduled throughout the summer months with the majority completed on time.

PAG will monitor this activity closely to establish how performance will be improved in 2017/18.

FB - Amey ★★★★★

Amey's performance improved from fair to excellent with a total of five ORIs raised.

The OC undertook extensive investigations and renewed the filter drain on A823(M) westbound verge.

Signing, signals, road markings and studs

NW - BEAR ★☆☆☆☆

Overall, BEAR's performance reduced from poor to very poor.

A remedial notice issued in October 2015 remained open at the end of the reporting period. A total of 252 ORIs were raised for but not limited to damaged/obscured/missing signs, badly worn road markings and missing road studs. In addition, some defects were not repaired within the contractual timescale.

Transport Scotland and PAG will work closely with the OC to establish how performance will be improved during 2017/18.

SW - Scotland TranServ ★★☆☆☆

Overall, Scotland TranServ's performance remained poor. 104 ORIs were raised for issues including damaged and/or missing regulatory signs and faded regulatory road marking defects.

PAG will continue to work closely with the OC to establish how performance will be improved during 2017/18.

Case Study provided by Scotland TranServ

Road Markings and Road Studs - Reflectometer survey of line markings and road studs

The previous inspection methods used were annual surveys of retro-reflectivity by high speed monitoring. This survey used side mounted equipment, which created difficulties by being able to survey only one line at a time.

A new surveying technique was adopted by Scotland TranServ. The system comprises of the sensor unit mounted on the front of a survey vehicle connected to a laptop inside the vehicle.

During a survey data is recorded and processed in 'real-time'. The recorded data includes route travelled, retroreflective values (RL) of road markings, the presence/absence of road markers, GPS co-ordinates, temperature and humidity.

The main benefits of this system are:

- one driver/operator required
- no precision driving close to markings/markers necessary
- data for up to six road assets collected in one pass
- road markings, symbols, road markers (studs) measured
- certified accuracy and repeatability
- independently evaluated and certified to EN 1436

Safety benefits include:

- no side attachment protruding from survey vehicle
- minimal risk of accidental damage to sensor/equipment
- safer to operate for driver and to other road users.

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NE - BEAR ★★☆☆☆

Performance improved from poor to fair with 92 ORIs raised.

During the first six months of the reporting period a significant backlog in ORIs being closed out successfully emerged. Performance improved in the latter six months with the successful closure of longstanding ORIs.

PAG will monitor this activity closely to establish how performance will be improved in 2017/18

Case Study provided by provided by BEAR NE

Road Markings and Road Studs

Road markings and road studs are a highly visual asset across the road network. They are used to define lanes, improve safety and allow for legal implementation of road laws. BEAR NE has been working with its experienced supply chain to enable it to provide a range of solutions for specific problems. The products have been developed to deliver cost effective solutions to target specific areas of the Trunk Road Network.

The solutions developed included:

High reflectivity markings

These were used to improve junction visibility. A series of 'at grade' junctions along the busy A92 were improved with the use of high reflectivity road markings. These markings created a visual aid to the travelling public to highlight the areas of interaction between side roads and the main Trunk Road through Fife.

Wet-night marking system

Use has been made of a wet-night marking system to improve road marking visibility in wet conditions. This is a marking with enhanced night retro-reflectivity for use on centre and edge lines. It has been utilised on unlit high speed areas of the network to enhance driver safety.

Cold applied hand markings

Multiple roundabouts and junctions including the A92 Bankhead roundabout were treated with a cold applied Methyl Methacrylate Acryline (MMA) product. This system offers significantly improved durability, providing a cost effective solution for these high wear sites.

Solar road studs (see Figure 3-01)

The high speed interchange at M90 J10 Craigend has benefitted from the installation of an innovative road stud product. The utilisation of solar studs has been carried out to enhance alignment visibility of the carriageway and improve the safety of the travelling public.



Figure 3-01 - Utilisation of solar studs (supplied by BEAR)

SE - Amey ★★☆☆☆

Amey's performance remained fair with 94 ORIs raised.

Issues were noted regarding faded or missing road markings which the OC had not identified as category 1 defects. The OC also had issues with advanced direction signs with several instances of missing or damaged signs not recorded.

PAG will continue to monitor this activity closely to establish how performance will be improved in 2017/18.

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Case Study provided by Amey SE

Road Markings and Road Studs

Working in partnership with Transport Scotland and the A1 action group, Amey was asked to implement a series of measures, which could assist in providing drivers greater road information during the hours of darkness. Amey undertook a review of multiple options including refreshing the road markings and road studs, solar studs and implementing a street lighting system.

Amey promoted the installation of solar studs, which had been successful elsewhere in the country, improving road definition during the hours of darkness.

Over the route, Amey installed over 4,100 studs during a four week window. Amey utilised a new method of installing the studs that reduced the implementation time from two to three months to just over three weeks which reduced the impact on the surrounding network. The main benefits to date are:

- improved safety through greater awareness of oncoming junctions
- enhanced driver experience via increased visibility of the oncoming junctions.

FB – Amey ★★☆☆☆

Amey's performance remained good with 11 ORIs raised.

The OC undertook a programme of works to replace the cycle path markings on the Forth Road Bridge and A823(M).

Structures

Maintenance of Structures

OCs are required to carry out cyclic maintenance to structures. These activities include clearing vegetation, cleaning movement joints and construction gaps, checking and cleaning bearings and bearing shelves, checking parapets and their mesh infills and connections to safety fences. Cyclic maintenance of structures is required to be carried out twice each year as a minimum.

NW – BEAR ★★☆☆☆

Overall, BEAR's performance continued to be fair.

The OC reported health and safety concerns at some sites when working at height but did not present any solutions or install new protective fencing around headwalls or wing walls.

Both the spring and autumn phases of work were completed as programmed.

PAG will continue to monitor this activity closely to establish how performance will be improved in 2017/18.

SW – Scotland TranServ ★★☆☆☆

Performance by Scotland TranServ continued to be poor.

The OC did not complete all outstanding actions to allow the closure of a NNC issued in 2015/16 and consequently the NNC was replaced with a remedial notice issued in July 2016.

The OC subsequently developed proposals which were considered sufficient to close the remedial notice in December 2016 and access improvements were completed at one of the identified sites.

Joint inspections with the OC may assist in improving performance in 2017/18.

NE – BEAR ★★☆☆☆

Performance by BEAR continued to be fair.

The OC reported there were health and safety risks to its operatives at some sites when working at height but made no progress with the proposed erection of protective fencing.

Despite its health and safety concerns the OC completed both the spring and autumn phases of work as programmed.

PAG will continue to monitor this activity closely to establish how performance will be improved in 2017/18.

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SE – Amey ★★☆☆☆

Performance by Amey improved from fair to good.

The OC did not complete all work in accordance with the contract. The OC identified access problems at some sites but did not report them timeously or present any solutions.

The 2016/17 phases of work were carried out to programme.

FB – Amey ★★☆☆☆

Performance by Amey remained good.

PAG monitoring of cyclic maintenance established that work completed was of a good standard with only a small number of issues noted. These were rectified by the OC in a timely manner.

The 2016/17 phases of work were carried out to programme.

3.2 Reactive maintenance

Lighting

All OCs continue to upgrade lanterns to LED lanterns. LEDs have an integral CMS system which allows the client to remotely monitor for outages and to carry out remote dimming of the luminaire.

NW – BEAR ★★☆☆☆

BEAR performance has deteriorated from excellent to fair.

Although the MI result remained excellent, multiple ORIs remained open for several months and a hazard notice was raised in February 2016 for exposed wiring.

BEAR has commenced a rolling programme of upgrades to sustainable LED lanterns with 40% (1170/4400) of the network completed within 2015/16.

PAG will monitor this activity closely to establish how performance will be improved in 2016/17.

SW – Scotland TranServ ★★☆☆☆

Overall, Scotland TranServ's performance remained poor.

A total of 110 ORIs were raised for lighting related issues. A NNC issued in May 2015 for lighting on M8 was escalated to a remedial notice in March 2017.

PAG carried out a monitoring exercise of M8 night time safety patrols between August 2016 and January 2017 which resulted in number of issues being raised.

The OC achieved an average MI score of 88%.

Scotland TranServ continued upgrades to sustainable LED lanterns across the network with schemes being completed on M8 and A737 within 2016/17.

PAG will continue to work closely with the OC to establish how performance will be improved during 2017/18.

NE – BEAR ★★☆☆☆

BEAR's performance improved from fair to good.

Performance in the first six months of the year was impacted by a backlog of defects and six ORIs raised by PAG.

The OC's MI value for lighting remained high throughout the year, averaging 97%.

The OC has generally performed well, achieving an average MI score of 97%, however, performance in the first six months of the year was impacted by a backlog of defects, as well as five ORIs raised by PAG. In the latter six months, BEAR improved and achieved good performance each month.

The OC commenced a rolling programme of upgrade to sustainable LED lanterns with 16% (918/5,789) of the network completed within 2016/17. This is an increase of 3% from 2015/16.

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SE - Amey ★★☆☆☆

Amey's performance remained good.

The OC's MI value for lighting remained high throughout the year, averaging 96%.

A total of 52 ORIs were raised for lighting related issues.

Amey continued with a programme of upgrades to sustainable LED lanterns, which commenced in 2015/16. At the end of the 2016/17 period 16% (647/4,038) of the network had been completed.

FB - Amey ★★☆☆☆

Amey's performance continued to be excellent.

The OC's MI value for lighting remained low, averaging at 78%.

The OC noted that lighting inventory within the FCBC works, were having an adverse effect on the OC's MI O1 value. After consultation with Transport Scotland and PAG, the OC will update the inventory within the FCBC works to accurately reflect the MI O1 value.

Safety fences, barriers and fencing

NW - BEAR ★★☆☆☆

Overall, BEAR's performance continued to be fair.

PAG raised 31 ORIs regarding failure to identify and record repairs within IRIS. These defects were left without repair beyond the contractual timescale.

PAG will continue to monitor this activity closely to establish how performance will improve in 2017/18.

SW - Scotland TranServ ★★☆☆☆

Overall, Scotland TranServ's performance remained fair.

PAG raised 40 ORIs for failure to record repairs to damaged safety barriers and boundary fences.

PAG will continue to monitor this activity closely to establish how performance will be improved in 2017/18.

NE - BEAR ★★☆☆☆

BEAR's performance remained fair.

A number of long outstanding defects negatively impacted on performance. This was further impacted by the OC failing to address ORIs raised by PAG.

PAG will continue to monitor this activity closely to establish how performance will be improved in 2017/18.

SE - Amey ★★☆☆☆

A continued poor performance by Amey.

The OC started the year with an open remedial notice and a long standing open defect. These were subsequently closed, but a further remedial notice was issued in August 2016 for poor supervision of works and installation of livestock fencing on M8 and M9 motorways. The OC addressed the matter promptly, resulting in the remedial notice being closed in October 2016.

PAG will continue to work closely with the OC to establish how performance will be improved during 2017/18.

Case Study provided by Amey SE

Boundary Fence Replacement

Approximately 4.5km of boundary fence needed replaced across the Unit between adjacent fields to reduce the risk of livestock accessing the motorway network.

Following receipt of a remedial notice regarding poor standard of workmanship for the installation of boundary fence, Amey recognised the issues raised and updated its method statements and risk assessments to reflect the lessons learnt and worked with Transport Scotland to ensure future schemes were constructed to specification.

To assist in the delivery of the boundary fence programme, Amey procured the services of external specialist subcontractors to ensure the requisite specification and standards were delivered and maintained going forward. Approximately 4.5km of boundary fence has now been installed with no repeat of specification/ workmanship issues (see Figure 3-02).

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Figure 3-02- Boundary fence replacement in SE Unit (supplied by Amey)

FB – Amey ★★☆☆☆

Amey’s performance remained good.

The majority of instances of damaged safety barrier were identified and repaired within contractual timescales by the OC. Early in the reporting period there was category 1 damage to a safety fence which remained unrepaired for longer than the contractual requirement.

3.2.1 Category 1 defects

Category 1 defects

Category 1 defects are the most serious defects, generally safety related which, once identified by the OC, should be made safe within 24 hours or quicker for certain defects, and permanently repaired within 28 days. Details of all category 1 defects are recorded in RMMf along with details and dates of all temporary and permanent repairs.

Damaged bridge parapets identified as category 1 defects are made safe using temporary safety barriers. However, these repairs can take longer due to the need to obtain or fabricate parts and use sector scheme trained and registered contractors. The contract permits 56 days.

Unit	2015/16	2016/17
NW	96%	97%
SW	92%	92%
NE	91%	94%
SE	95%	95%
FB	95%	98%

Figure 3-03 – OC performance in repairing category 1 defects

NW – BEAR ★★★★★

Overall performance by BEAR remained good, achieving an average figure of 97% (see Figure 3-03).

The number of category 1 defects open beyond the contractual repair period of 28 days reduced significantly in August 2016 and remained low throughout the period.

SW – Scotland TransServ ★★☆☆☆

Overall, performance remained fair, achieving an average PI of 92% (see Figure 3-03).

PAG analysis of PI 03 category 1 defects indicated that the number of outstanding defects has risen significantly.

PAG will continue to monitor this activity closely to establish how performance will be improved in 2017/18.

NE – BEAR ★★☆☆☆

Overall performance by BEAR remained fair achieving an average figure of 93% (see Figure 3-03).

PAG undertook analysis of PI 03 category 1 defects which highlighted defects that had not been loaded correctly within IRIS or repaired within contractual time scale. The OC managed to reduce the number of outstanding defects to a low level.

PAG will continue to monitor this activity closely to establish how performance will be improved in 2017/18.

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SE - Amey ★★★☆☆

Overall, performance remained fair, achieving an average PI of 94% (see Figure 3-03).

PAG analysis of PI 03 category 1 defects confirmed that the OC managed to minimise the number of the outstanding defects to a low level.

PAG will continue to monitor this activity closely to establish how performance will be improved in 2017/18.

FB - Amey ★★★★★

Amey's performance improved to excellent achieving an average PI of 97% (see Figure 3-03).

Defect and backlog levels were low throughout the period.

3.2.2 Incident response

Incident response

The OCs must provide resources to deal with incidents on the network or to assist the emergency services.

Incidents include:

- debris removal
- overturned lorries
- road traffic accidents/breakdowns
- landslips
- flooding
- serious carriageway defects
- bridge/gantry strikes
- spillages
- severe weather.

The OCs are required to respond to incidents as quickly as possible and within specific timescales depending on the type of road.

Trunk road incident support service (TRISS)

TRISS operates on trunk road network routes where the potential for major delays due to breakdowns or other incidents have been identified.

The overall aims of TRISS are to:

- clear up incidents quickly
- offer assistance to broken down vehicles
- reduce congestion
- free up police time.

TRISS vehicles are specially adapted and equipped high-roofed vans. They are operated by trained staff working for the OCs. The target time for TRISS to get to an incident is 20 minutes.

Incident response

In addition to TRISS, each OC is responsible for responding to incidents across the entire Unit. Specific contractual timescales are set for the OCs to respond, and a monthly PI is used to measure whether response times are achieved. This PI figure ignores incidents recorded against sections requiring TRISS attendance occurring within the periods which require TRISS response times. Figure 3-04 shows each OC's performance in dealing with incidents.

Secondary and contingency response performance figures were affected by the short term issue of data transfer.

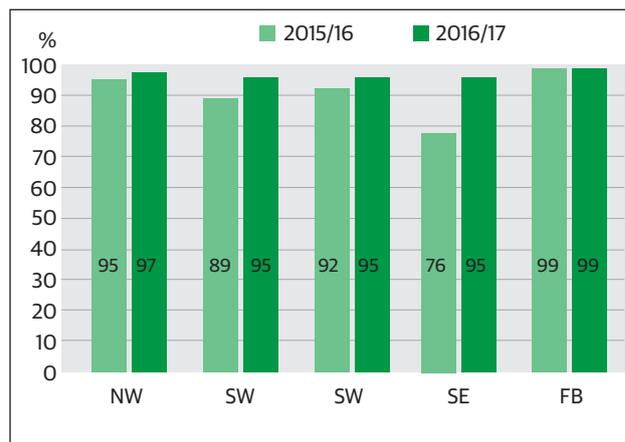


Figure 3-04 - OC performance in dealing with incidents

NW - BEAR ★★★★★

Overall performance improved to excellent with the PI figure increasing 95% to 97%.

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SW – Scotland TranServ ★★☆☆☆

Scotland TranServ performance improved to good with the PI figure increasing from 89% to 95%.

A NNC for customer care was issued in July 2016 and was subsequently closed in November 2016.

NE – BEAR ★★☆☆☆

Overall performance improved to good with the PI figure increasing from 92% to 95%.

SE – Amey ★★☆☆☆

Amey's performance improved to good, with a significant increase in the reported PI figures from 76% to 95%. A number of discrepancies between the results downloaded from IRIS and the OC reported PI figures were noted throughout the first six months of the reporting period.

FB – Amey ★★☆☆☆

Amey maintained excellent performance with no change to the reported PI figure of 99% from last year.

Case Study provided by Amey FB

Critical incident management

On 11 January 2017 an HGV was blown over by high winds (see Figure 3-05), causing extensive structural damage, which resulted in the Forth Road Bridge being closed for 19 hours. At the time of the incident the Forth Road Bridge was closed to high sided vehicles, as the winds had been gusting in excess of 50mph. Traffic Scotland had extensive signage displayed on approaching overhead gantries.

The speed and resilience of the Amey team in mobilising and undertaking temporary repairs in extremely challenging conditions to enable the bridge to be re-opened to traffic was commendable.



Figure 3-05 – Over blown vehicle incident on Forth Road Bridge (supplied by Amey)

Hazard notices

Hazard notices are issued to OCs immediately when PAG identifies hazardous defects/situations, whether these are the responsibility of OCs or third parties.

Hazard notices found on the network can include:

- Poor traffic management
- Faulty traffic signals
- Exposed electrical wiring
- Missing/broken ironwork and gullies (within trunk road boundary)
- Dangerous carriageway defects (potholes)
- Debris on the carriageway.

A total of 55 hazard notices were issued by PAG during 2016/17 (see Figure 3-06).

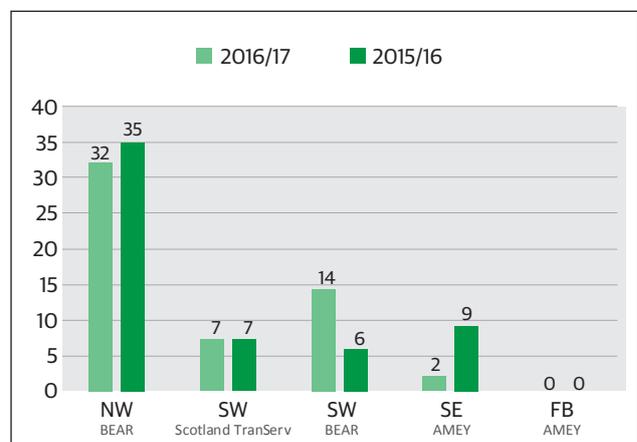


Figure 3-06 – Number of hazard notices issued

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3.2.3 Winter

Winter treatments

During the winter period, which runs from 1 October through to 15 May, the OCs must minimise delays and disruptions caused by snow and ice. To do this, the OCs carry out precautionary treatments.

In addition, when forecasts change significantly or surface conditions become unexpectedly icy, reactive treatments are undertaken. The response times for these reactive treatments are measured by a PI.

The OCs decide which treatments are necessary to comply with the contract. They are also required to keep records of the work planned and undertaken.

Winter service

The OCs are required to provide a dedicated service 24 hours a day, seven days a week throughout the winter period. The objective is to keep the network free from ice and snow as far as is reasonably practicable, hence reducing risks to road users.

Winter weather conditions

The Met Office reported that winter 2016/17 was a dry and mild winter, with any unsettled and stormy spells of weather relatively brief until the second half of February 2017. December 2016 was the eighth warmest for the UK since 1910, although well below December 2015.

Cold spells in February 2017 led to a number of snow events, including Storm Doris, which affected the trunk road network. December 2016 was milder than average, by up to 3°C over parts of Scotland, resulting in rainfall figures that were near or just above average in central and northern Scotland. Drier conditions returned in January 2017, with rainfall below average.

Winter service improvements

Pre-winter exercises - all Units

Early in the winter maintenance period, Transport Scotland and PAG organised and facilitated two winter desk scenarios, which

are designed to test the delivery and resilience of the current OC procedures through an unfolding series of hypothetical scenarios. As the scenarios developed the OCs' procedure for communicating the current and anticipated weather and traffic conditions with relevant stakeholders was reviewed. Attendance at the pre-winter exercises by representatives of Transport Scotland, PAG and the OC's allowed for the sharing of best practices and discussions on possible improvements.

Performance assessment

PAG assessed the OCs' performance for the following areas over the 2016/17 winter period:

- winter readiness
- winter decision-making and actions
- winter service PIs
- management of salt stocks
- road closures.

Winter readiness

Winter preparedness audits were carried out in all Units prior to the start of the winter season.

The audits concluded that contractually, the OCs were prepared to give the level of service required during the winter maintenance period.

NW - BEAR ★★★★★

Performance by BEAR was again excellent.

No findings were raised at the winter preparedness audit.

SW - Scotland TranServ ★★★★★☆

Performance by Scotland TranServ improved to good.

One finding was raised at the winter preparedness audit regarding failure to carry out dry runs for all routes on the Unit prior to October 2016. The finding was actioned timeously by the OC.

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NE - BEAR ★★★★★

BEAR's performance improved to excellent.

No findings were raised at the winter preparedness audit.

The new salt store at Errol was completed in December 2016.

SE - Amey ★★★★★☆

Performance by Amey reduced from excellent to good.

One finding was raised at the winter preparedness audit for the operational salt not being fully covered at the OC's Burghmuir depot. This was rectified by the OC by the end of October 2016.

FB - Amey ★★★★★

Amey's performance improved to excellent.

No findings were raised at the winter preparedness audit.

Throughout the winter period the OC monitored the patrol and treatment routes and modified them to suit any changes to the temporary road layouts imposed by the ongoing FCBC works.

Winter decision-making

As with previous winter seasons, weekly liaison meetings between Transport Scotland, OCs and weather forecasters were undertaken. During the teleconference calls a review of the winter service undertaken during the previous week was held, along with discussions on the expected forthcoming weather conditions for all five Units and expected winter treatments that may have been required.

During periods of weather warnings, as issued by the Met Office, the teleconference calls were re-scheduled or additional calls held to ensure resources were available during the periods of adverse weather.

NW - BEAR ★★★★★

Overall performance by BEAR improved to excellent.

A total of 20,999 tonnes of salt was used over 4,123 treatments.

SW - Scotland TranServ ★★★★★☆

Overall performance by Scotland TranServ remained good.

A monitoring review was carried out following winter weather related accidents on A82 at Stonemollan. The accidents resulted from water run-off from adjacent fields, which froze on the carriageway. The location of the accidents is a known area requiring special attention due to the run-off from the fields. The OC has recommended the addition of a further Vaisala sensor in this area.

A total of 7,517 tonnes of salt was used over 1,545 treatments.

NE - BEAR ★★★★★

Overall performance by BEAR improved to excellent. Routes in the Unit were observed to be clear of snow and ice during PAG inspections.

A total of 10,986 tonnes of salt was used over 1,873 treatments.

SE - Amey ★★★★★☆

Overall performance by Amey remained good.

During a snow event, which temporarily closed A68 at Newton St. Boswells, the OC undertook the necessary actions to re-open the route timeously. However, Amey failed to effectively communicate the road closure with relevant stakeholders, including the general public.

FB - Amey ★★★★★

Overall performance by Amey remained excellent.

Due to the milder conditions experienced in the Unit during the winter months, the number of treatments completed by the OC was less than in the previous year.

A total of 568 tonnes of salt used over 230 treatments.

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Winter Service PI

To measure performance in undertaking winter duties, the OCs report their performance monthly using one PI that incorporates the following three activities:

- Unplanned treatment response times
- Planned treatment times
- Successful electronic data logger downloads.

The PI is calculated as the arithmetic average of the three activities (see Figure 3-07).

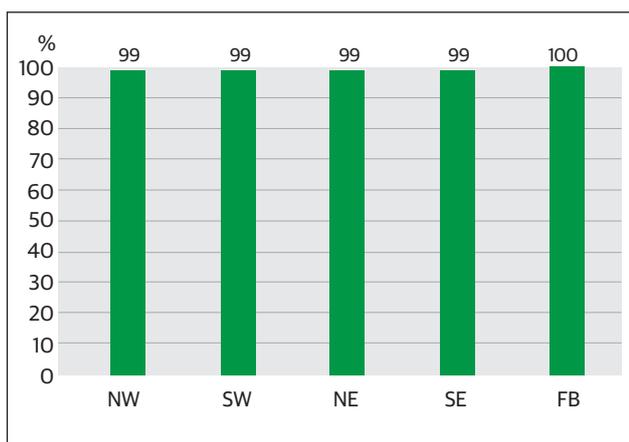


Figure 3-07 - Winter performance (PI 11)

NW – BEAR ★★★★★

BEAR's performance remained excellent with a PI result of 99%.

SW – Scotland TranServ ★★★★★

Scotland TranServ's performance improved to excellent with a PI result of 99%.

NE – BEAR ★★★★★

BEAR's performance remained excellent with a PI result of 99%.

SE – Amey ★★★★★

Amey's performance remained excellent, with a PI result of 99%.

FB – Amey ★★★★★

Amey's performance remained excellent, with a PI result of 100%.

Management of salt stocks levels – all Units ★★★★★

Salt usage during the preceding week and up to date salt stocks were reported regularly as part of the OC's weekly winter report, which are submitted prior to the weekly liaison.

There were no recorded issues with the management of salt stock levels, with all OCs proactive in maintaining salt stock levels.

Winter related road closures N/A

NW – BEAR, SW – Scotland TranServ, NE – BEAR & FB - Amey

There were no winter-related road closures over the contractual timescale of four hours.

SW – Scotland TranServ

There were two winter related events which resulted in road closures, with the closure on A82 lasting longer over four hours.

SE – Amey

Amey dealt with three extreme weather related incidents, none of which resulted in road closures of greater than four hours.

3.3 Planned maintenance

Planned maintenance

Work flowing from inspections together with other priority remedial works already identified feed into the one and three year programmes of planned maintenance needs, which are updated annually. This maintenance work is programmed based on the budgets available to each OC.

Planned maintenance schemes are vital to maintain assets in good serviceable condition and require careful planning, prioritisation and coordination.

Planned maintenance is carried out to maintain the asset value of the network.

These operations are carried out by the OC for scheme values up to £350k. Larger schemes are procured using works contracts (see section 3.4).

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3.3.1 Roads

Maintaining roads

This typically includes:

- reconstruction and resurfacing of carriageways
- application of surface dressing and anti-skid surfacing
- upgrading safety fencing
- replacing road markings and studs.

NW – BEAR ★★☆☆☆

BEAR's performance continued to be good.

The main works undertaken included carriageway resurfacing overlays, inlays, resurfacing (TS2010), carriageway reconstructions, crack and seat, application of anti-skid surfacing and replacement of road markings and road studs.

Site inspections by PAG observed that health and safety protocols were followed by the OC. Supervision, workmanship and traffic.

Subsequent to works carried out in November 2015, surface course premature failure was identified by PAG at A9 Slochd in February 2016.

SW – Scotland TranServ ★★★★★

Scotland TranServ's performance remained excellent.

Works undertaken included crack and seat, inlays, overlays application of anti-skid surfacing and replacement of road markings and road studs.

Central reserve safety barrier was successfully replaced on M8 from J19-12. In addition, thirty-six high mast lighting units were refurbished on M8 J17-19.

PAG site inspections revealed that traffic management continued to be of a high standard, the introduction of driver flash card at site holding points has been another improvement to site safety.

Site supervision, workmanship and record keeping on sites continued to be good.

TS2010 continued to be successfully installed across the network.

NE – BEAR ★★★★★

BEAR's performance remained excellent.

A good quality of workmanship was recorded during the construction of schemes. Operations included resurfacing, crack and seat, filter drains, red chip replacement and road markings.

BEAR's supervision and record keeping were of a good standard at sites visited and also at post-completion reviews where good documentation was recorded.

BEAR's site operations audited by PAG had a good standard of record keeping, traffic management and supervision.

The site testing (grip test) on newly laid surface course and the production of as build drawings was not to contract requirements and requires improvement.

Traffic management was implemented to a good standard and to the required specification.

A large proportion of the major works were carried out at night time / weekend working.

Innovative operations included the installation of LED lighting, cold applied road markings which has better resistance to wear on high stress sites. TS2010 surface course continued to be successfully laid, the more traditional Hot Rolled asphalt (HRA) was also installed on various sites across the network.

Extensive concrete joint repairs were completed at A90 Brechin Bypass and various locations on the M90 prior to overlaying the existing concrete panels with a thin surface course with a high strength binder course.

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Case Study provided by BEAR NE

M90 Concrete Carriageway Refurbishment Strategy

Rigid concrete pavements are not particularly common on Scotland's Trunk Road Network and require an alternative maintenance regime compared to traditional flexible pavements. The 12.5 km stretch of the M90 carriageway between J5 and J8 was constructed in 1972 and in recent years its condition has deteriorated as it reaches the end of its design life (see Figure 3-08). This has resulted in a significant increase in the routine maintenance required as well as the associated inconvenience and disruption to the travelling public.

BEAR developed a methodology to allow the introduction of thin surfacing solutions as an immediate alternative to undertaking full reconstruction. This involved removing a thin layer of the concrete carriageway to allow concrete repairs to be carried out to joints and localised areas. A new asphalt surface is then installed over the top to create a smooth running and durable surface for trunk road traffic, helping to increase the life span of the carriageway for a further ten years (see Figure 3-09).

The development and implementation of the remediation strategy demonstrated that innovative solutions can be used to provide a sustainable and cost effective outcome. The methodology adopted and the provision of a durable surface has extended the life of the pavement, and significantly reduced the need for ongoing routine maintenance and the associated disruption whilst improving the ride quality, journey time reliability and safety for the travelling public.



Figure 3-08 - Deterioration of M90 carriageway (supplied by BEAR)



Figure 3-09 - Refurbishment of M90 carriageway (supplied by BEAR)

SE - Amey ★★☆☆☆

Amey's performance reduced to fair.

Good workmanship with good quality records were completed during site inspections by PAG. This was reflected at the majority of the post-completion reviews but some core records were not in the site file or available during the reviews and had to be sourced and forwarded to PAG to complete the review.

Health and safety procedures were found to be of a good standard with all operatives recording good PPE for the appropriate operations.

Traffic Management during site inspections was confirmed to be compliant with Chapter 8 requirements.

The quality and quantity of the Amey staff supervising carriageway reconstruction and drainage work was not of an acceptable standard.

A remedial notice was issued and Amey implemented an action plan, which PAG will monitor.

The site testing (grip test) on newly laid surface course and the production of as build drawings was not to contract requirements and requires improvement.

Innovative operations included pavement reinforcement within the pavement layers installation of LED lighting units. TS2010 thin surface course with 10mm aggregates were successfully used on numerous surface courses. Hot rolled asphalt surface courses (HRA) were installed on various sites.

PAG will monitor this activity closely to establish how performance will be improved in 2017/18.

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FB – Amey ★★★★★

Amey's performance remained excellent.

There was only a limited amount of planned works carried out, due mainly to the fact that there is a relatively reduced network in comparison to the other Units and the scale of the roadworks being carried out in association the construction of the Queensferry Crossing.

Works undertaken included: patching and resurfacing on the A90 and M90 roads. Operations are in general completed at night on weekends due to traffic flows.

Experienced resources from supply chains delivered good quality workmanship with a reasonable quality of records being observed by PAG during site inspections and post-completion reviews.

3.3.2 Structures

Maintaining structures

The typically includes:

- re-waterproofing of bridge decks
- resurfacing of bridge decks
- replacement of deck joints
- concrete repairs
- repainting of steelwork
- repair and replacement of parapets
- repair of scour damage at watercourses.

NW – BEAR ★★★★★☆

BEAR's performance remained good.

Scour repair works continued to be high priority. Generally, designs and site works progressed well although some construction problems were encountered at A82 Kiachnish Bridge. All eight planned repair schemes were completed.

Replacement bridges at A830 Ranochan and A830 Arieniskill were successfully constructed using temporary diversions at both locations ensuring continuous traffic flow.

A scheme to design and install new tuned mass dampers at A9 Kessock Bridge was completed. The impact of these larger dampers restricting the travel of the maintenance gantry was

not fully investigated, requiring the OC to implement alternative access arrangements to parts of the bridge.

BEAR successfully completed the design and installation of replacement parapets on A9 Cromarty Bridge, however, the OC took longer than anticipated to commence the design of connections to adjacent safety barriers.

The OC continued to issue value for money assessments late for large schemes. Improved performance was noted with regard to completing repairs to damage to crown property within contractual timescale. The bridges budget was increased on more than one occasion which BEAR fully utilised.

Case Study provided by BEAR NW

Delivery of bridges programme

Through the year BEAR NW bridges team and supply chain delivered a complex and challenging programme to the value of £13.1m. The initial £10m budget was increased to accommodate this ambitious programme which included a wide range of schemes working in the most challenging of environments.

The A830 bridge replacement programme continued apace with two new structures completed with temporary bridging provided to minimise disruption. The retaining wall at the historic Wellington lay-by on A82 has been a longstanding problem on the network and its upgrade allowed the lay-by to be re-opened for public use. This was popular with local tourist groups and The Highland Council.

The A82 Laggan swing bridge repainting was also completed in a continuation of the upgrade programme for these historic structures on the Caledonian Canal. The work was undertaken with minimal disruption and carefully managed to ensure there was no environmental damage. The work will ensure the historic swing bridge will continue to perform a vital function for years to come. The A9 Cromarty Parapet replacement was completed. This involved the replacement of 3000m of substandard parapet. Environmental restriction at this SSSI and Marine License requirements had to be carefully factored into the design and programme. The works are a precursor to significant refurbishment programme which commenced in 2017.

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SW – Scotland TranServ ★★☆☆☆

Overall, Scotland TranServ's performance continued to be fair.

The OC sub-contracted the refurbishment and reinstallation of four sign gantries on M8. Overall the quality of the work was good.

The OC supervised the successful construction of new maintenance access staircases and walkways at White Cart Viaduct.

Progress with design of A77 Carlock Wall refurbishment was slow. By the end of the period the OC had not provided an updated cost estimate or provided a value for money assessment.

The OC redesigned the M8 Kingston Bridge south approach parapet replacement scheme. The OC identified additional design problems at a late stage which delayed the tender issue.

An improvement in completing repairs to damage to crown property within the contractual timescale was noted.

The Bridges budget was adjusted on a number of occasions, however, the OC managed these changes well and fully utilised its budget.

PAG will continue to monitor this activity closely to establish how performance will be improved in 2017/18.

Case Study provided by Scotland TranServ

M8 White Cart Viaduct Access Walkway Installation

The White Cart Viaduct is a 23 span east-west elevated structure carrying the dual 3-lane M8 motorway over the White Cart Viaduct Water. The viaduct was completed in 1968 and is an 822m long steel/concrete composite twin trapezoidal box girder.

As part of the Phase 3 strengthening works completed by BAM Nuttall in 2012, the access provisions to the bridge were altered. In particular, the central suspended span over the river was made more difficult to access due to alterations required to strengthen the structure.

The scheme was developed to install a Fibre Reinforced Plastic (FRP) walkway with steel spiral staircases (see Figure 3-10 - 3-11). The work was recognised at the early scoping stages of the project that robust staircase access was the best possible means of access.

The centre span of the viaduct is 76m long and spans the White Cart Water. A walkway of a similar length was installed. Scotland TranServ prepared a specimen design before awarding the works to AMCO as a design and build contract following a competitive tender process. The main walkway was constructed by the use of rope access technicians. Innovative rigging and pulley systems were utilised to raise the walkway sections to the bridge. A safe system is now in place which allows access to the central span of White Cart Viaduct.

The innovative solution ensures that the centre span can be accessed without the need for road closures and underbridge access platforms.



Figure 3-10 – Installation of spiral stairs on M8 White Cart Viaduct (supplied by Scotland TranServ)



Figure 3-11 – Installation of walkway on M8 White Cart Viaduct (supplied by Scotland TranServ)

Chapter 3

Delivery of service

NE - BEAR ★★☆☆☆

BEAR's performance continued to be poor.

Overdue documents and cost estimates for several planned schemes resulted in a remedial notice being issued to the OC in August 2016. The OC issued outstanding information allowing the remedial notice to be closed.

As a result of delays to designs, construction of several planned schemes were deferred to 2017/18. Additional quarterly bridges design meetings were instigated to discuss planned schemes in more detail.

The OC brought forward and successfully completed deck refurbishment at M90 Craigend Bridge, parapet replacement at A96 Don Inverurie New Bridge and scour repairs at A90 Persley Bridge.

The OC was instructed on a number of occasions to expedite scour assessments, however, by the end of the period the work had not been completed.

A parametric study and an options study for the replacement of the concrete deck edge beams at M90 Friarton Bridge were completed by the OC. The OC fully utilised its bridges budget.

PAG will continue to work closely with the OC to establish how performance will be improved during 2017/18.

SE - Amey ★★☆☆☆

Amey's performance continued to be fair. Much of Amey's Bridges budget for the year was allocated to the refurbishment of A7 Old Tweed Bridge, thereby limiting financial resources available for programming additional schemes.

The OC's additional schemes included carrying out repairs at A7 Skippers Bridge as well as deck refurbishment / resurfacing works at the M9 Forth, A985 Kincardine Bridge and A702 Clydes Rail Bridge.

Improved performance was noted with regard to completing repairs to damage to crown property within contractual timescale. PAG will continue to monitor this activity closely to establish how performance will be improved in 2017/18.

FB - Amey ★★☆☆☆

Amey's performance reduced to good.

The most significant expenditure encountered was in association with the Truss End Link emergency repair, including trial works for phase 3 repairs. South Anchorage storage facility works, which started last year, were completed successfully. Work started on the Suspended Span Under Deck Access improvements and the Main Span Billet repairs.

Case Study provided by Amey FB

Truss End Link Replacement Trial

Building on the successful re-opening of the Forth Road Bridge in December 2015, this project saw the investigation, design and construction of an innovative solution to replace the original fractured truss end link in advance of a major works contract next year that will see all seven remaining links replaced (see Figure 3-12). Developed in a manner that considered buildability, visual aesthetics, future maintenance and world leading structural health monitoring, the project attained excellent levels of worker safety without incurring any significant traffic disruption.

The project involved:

- 3D visualisation software to enhance the design;
- extensive temporary works and scaffolding below deck;
- significant local strengthening to the main towers using high strength reinforced concrete, including a full scale model replica constructed on land;
- temporarily supporting the end of the bridge whilst a seven tonne section of the bridge was physically cut out;
- installing a world first 7.5 tonne sliding bearing 50m above the River Forth;
- maintaining the physical appearance of this listed structure through liaison with Historic Environment Scotland;
- installing sophisticated monitoring systems to observe structural behaviour.

Recognised at the ICE Saltire Awards for the greatest contribution to Scotland and for the public's ICE People's Choice Award, the project demonstrated exemplary technical, construction and operational accomplishments.

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Delivery of service



Figure 3-12- Truss end link replacement trial on Forth Road Bridge (supplied by Amey)

3.4 Works contracts

Works contracts

Schemes with an estimated value between £350k and £5m are generally put out to tender as works contracts. The OCs manage the procurement of works contracts through design to construction on behalf of Transport Scotland.

Schemes of a value greater than £5m are generally managed by Transport Scotland's Major Transport Infrastructure Projects Directorate team and are outside the OCs' responsibilities.

Tender documents

Prior to contractors being invited to tender for works contracts, the OCs submit draft tender documents to PAG for review (see Figure 3-13). PAG undertakes a high level review of all draft tender documents submitted and a detailed review of at least 25% of tender documents received each year.

NW – BEAR ★★☆☆☆

Performance by BEAR was fair.

A set of draft tender documents for A83 Strone Point improvement was received by PAG for review. Significant inconsistencies and omissions were identified during the review and these were rectified by the OC.

PAG will monitor this activity closely to establish how performance will be improved in 2017/18.

SW – Scotland TranServ ★★☆☆☆

Performance by Scotland TranServ continued to be fair.

A draft tender document for the retender of M8 Kingston Bridge South Approaches (Cope & Parapet Refurbishment) was received (This scheme was previously reviewed in 2015/16). A detailed review noted a number of inconsistencies and some missing information.

PAG will continue to monitor this activity closely to establish how performance will be improved in 2017/18.

NE – BEAR (N/A)

During the reporting period, no tender documents were issued to PAG for review.

SE – Amey (N/A)

During the reporting period, no tender documents were issued to PAG for review.

FB – Amey ★★☆☆☆

Performance by Amey was good.

A draft tender document for the Forth Road Bridge Truss End Link Replacement was received for review. Amey was given a tight timescale to procure these works, which followed the emergency temporary repair work undertaken in the bridge in early 2016. The initial set of documents was supplied in accordance with Schedule 6 Part 1 and review comments and alterations were exchanged right up to the time that the tender was issued.

Unit	Number received 2015/16	Number received 2016/17
NW	0	1
SW	2	1
NE	0	0
SE	1	0
FB	0	1
Total	3	3

Figure 3-13 – Number of tender documents received by PAG

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Supervision

NW - BEAR (N/A)

No works contracts were recorded during the period.

SW - Scotland TranServ ★★★★★

Performance by Scotland TranServ continues to be excellent.

A contract was awarded to Lightways for the lighting and electrical refurbishment at A898 Erskine Bridge. The work included the replacement of 900 lamps with LED lighting with an estimated 70% reduction in energy use.

The OC supervised the works over six months and were completed in November 2016.

NE - BEAR (N/A)

No works contracts were undertaken during the period.

SE - Amey ★★★★★☆

Performance by Amey was good.

A works contract was awarded to Scottish Borders Contracts for refurbishment and strengthening of A7 265 Old Tweed Bridge. Works commenced in June 2016 and operations are due to be completed in late 2017. Amey engaged with the community and local businesses regarding the ongoing operations. Good records and documentation were recorded. The operation was delayed as a result of adverse weather, high water levels in the river and high voltage cable diversions. Some relatively minor additional costs were encountered by the contractor. The current value of the works is estimated at 1% over the tender.

FB - Amey (N/A)

No works contracts were recorded during the period.

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Quality of service

Key points

Quality management

- NW, NE, SW and SE maintained accreditation to BS EN ISO 9001:2008 quality management systems (QMS), FB achieved accreditation.
- All Units will be working to achieve ISO 9001:2015 accreditation in the 2017/18 period.
- The QMS performance of NW and NE remained excellent and SW performance improved to excellent. SE and FB QMS performance was determined as fair.

Health and safety management

- All Units delivered a good performance in terms of Health and Safety.
- The number of reportable incidents was the same in NW, SW, NE and increased in SE. There were no reportable incidents in FB.
- All OCs maintained accreditation to BS OHSAS 18001:2007 either directly or through their parent organisation.

Environmental management

- NE delivered excellent performance regarding its EMS, NW delivered good performance and SW, SE and FB delivered fair performances.
- OCs maintained accreditation to BS EN 14001:2004 either directly or through their parent organisation.
- Environmental audits conducted of all OCs demonstrated a high level of compliance, however, two findings were raised in SW.
- All Units will be working to achieve ISO 14001:2015 accreditation in the 2017/18 period.

Continuous improvement

- The number of remedial notices raised in 2016/17 is consistent with the number raised in 2015/16.
- The number of NNCs raised in 2016/17, which represents the lowest overall total since the 4G contracts commenced, has decreased from the number raised in 2015/16.
- NW achievement of the performance indicators has remained consistent with exception to PIO7. There has been an improvement to the performance indicators achieved by SW, NE, SE and FB.

Chapter 4

Quality of service

4.1 Management systems

OC Management systems

The OCs are required to maintain management systems that comply with:

- BS EN ISO 9001 - Quality management systems
- BS EN ISO 14001 - Environmental management systems
- BS OHSAS 18001 - Occupational health and safety systems

Management systems refer to a framework of processes and procedures used to ensure that an organisation can fulfil all tasks required to achieve its objectives (see Figure 4-01).

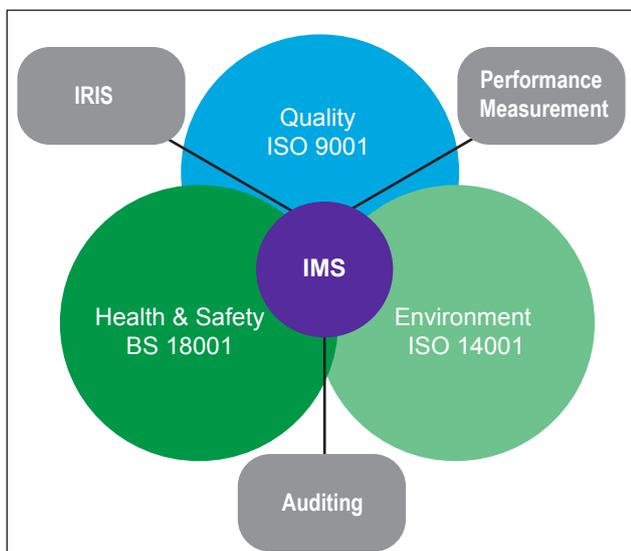


Figure 4-01 - Processes influencing an Integrated Management System (IMS)

Quality management - achieving and maintaining compliance

FB achieved certification for its quality, environmental and occupational health and safety management systems in June 2016 as contractually required.

NW, SW, SE and NE continued to meet the requirements of BS EN ISO 9001:2008.

Quality management systems - processes

NW - BEAR & NE - BEAR

In 2015/16 PAG had undertaken investigations in NW and NE that identified a number of QMS process failures. An improvement plan to address these issues was developed by BEAR and agreed with Transport Scotland. In 2016/17 PAG conducted QMS audits in both Units that focussed on the agreed improvement plan. The audit identified a number of areas where BEAR had been slow in implementing improvements, but the OC responded positively by committing to address the issues raised at the audit with immediate effect.

Quality management - rectifying non-compliance - (PAG and internal)

The OC performance in closing out non-conformances is measured by PI 15 for NW, SW, NE and SE and PI 17 for FB (see Figure 4-02).

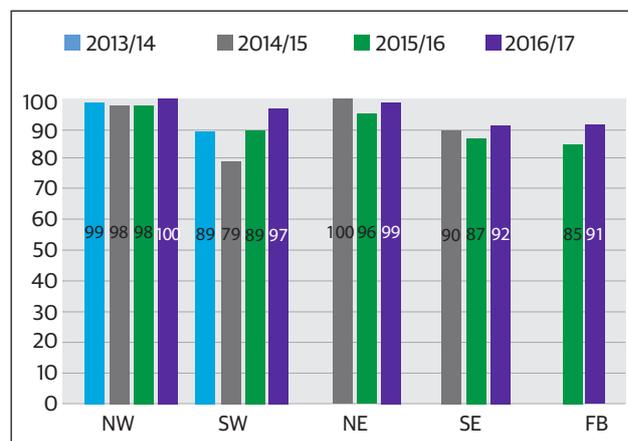


Figure 4-02 - PI 15/PI17: OC performance in closing out non-conformances

NW - BEAR ★★★★★

BEAR maintained excellent performance in closing non-conformances within required time-scales with an annual result of 100% achieved for PI 15.

Throughout the year PAG monitored BEAR's 2016/17 internal audit programme. The approved programme was successfully completed on time. In addition to its agreed internal audit programme, BEAR programmed three adhoc audits. Two of

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Quality of service

the adhoc audits were completed; however, the third was delayed. The delayed audit was originally programmed for March 2017, but as the scheme to be reviewed was postponed the associated audit was carried forward into the 2017/18 programme.

SW – Scotland TranServ ★★★★★

Scotland TranServ's performance in closing non-conformances within required time-scales improved considerably from poor to excellent with an overall figure of 97% for PI 15.

PAG carried out one QMS audit during the year focussing on National Highway Sector Scheme (NHSS) 2 for the supply, installation, maintenance and repair of road vehicle restraint systems. This included a site visit to an operational barrier repair scheme. The coverage of the audited scope was determined to be satisfactory.

Scotland TranServ successfully completed its 2016/17 internal audit programme. PAG monitoring confirmed that these audits were satisfactory and achieved the requirements of the contract.

NE - BEAR ★★★★★

BEAR continued to deliver excellent performance for PI 15 closure of non-conformances within required timescales, with an annual result of 99% achieved.

PAG monitored BEAR's 2016/17 internal audit programme throughout the year which was completed satisfactorily. The OC had also programmed seven additional ad-hoc audits in response to issues identified internally, three of these audits focussed on the lighting inspection aspect, the audits' scopes included lighting OI processes and procedures, and lighting inventory processes and procedures.

SE - Amey ★★★★★

Amey's performance in closing non-conformances within required time-scales improved to good, with an overall average of 92% for PI 15. Performance increased gradually throughout the year with monthly results achieving 100% for the last six months of 2016/17.

PAG monitored Amey's 2016/17 internal audit programme; the programme was successfully completed on-time.

A PAG QMS audit verified that Amey's' processes for the selection, assessment, and management of subcontractors were well developed, comprehensive and met the requirements of the contract.

PAG will monitor this activity closely to establish how performance will be improved in 2017/18.

FB - Amey ★★★★★

Amey's performance in closing non-conformances within required time-scales improved to fair with a PI 15 figure of 91%. Performance increased steadily throughout the year; however, it was noted that performance decreased marginally in February and March 2017.

The OC completed its internal audit programme for 2016/17. PAG monitoring confirmed that Amey's internal audit process was satisfactory and met the requirements of the contract.

PAG undertook a QMS audit during the year which established that Amey's' processes for the selection, assessment, and management of subcontractors were satisfactory and met the requirements of the contract.

PAG will monitor this activity closely to establish how performance will be improved in 2017/18.

Health and safety management

Health and safety

OCs are required to report to the Health and Safety Executive (HSE) any incidents involving deaths and injuries, occupational diseases and dangerous occurrences under the legislation requirements of The Reporting of Injuries, Diseases and Dangerous Occurrences 2013 Regulations (RIDDOR).

Reported RIDDORs to the HSE are shown in Figure 4-03.

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Unit	Number of RIDDORS	
	2015/16	2016/17
NW	1	1
SW	2	2
NE	2	2
SE	1	4
FB	0	0

Figure 4-03 – OCs' RIDDOR performance

NW - BEAR

One RIDDOR was reported to the HSE in August 2016 as a dangerous occurrence due to a failure of a coffer dam which was installed in a watercourse to provide a dry working area.

SW - Scotland TranServ

Two RIDDORs were reported to the HSE. The first reported accident occurred in May 2016 when an operative went over on his ankle when descending an embankment causing torn ligaments in his ankle. The second reported accident occurred in July 2016 when an operative bruised his foot while moving tower lights manually.

NE - BEAR

Two RIDDORs were reported to the HSE. The first RIDDOR reportable accident occurred in August 2016 when a paint canister was pierced emitting a volatile paint which caught fire resulting in a burn to an operative's face.

The second accident occurred in October 2016 whilst the OC was undertaking pavement resurfacing on A92 at Balfarg a roller crossed the kerb edge and overturned; the operator suffered a fracture in his elbow.

SE - Amey

Four RIDDORs were reported to the HSE. The first occurred in June 2016 when an operative trying to adjust a rod on a trailer, fell off the trailer onto an embankment fracturing his elbow and bruising his leg and back. The operative attended hospital and was signed off from work for a seven-week period. The second accident occurred in September 2016 when a sign fell on an operative's foot breaking a metatarsal bone. The third accident occurred in October 2016 when an operative fractured a rib lifting gully lids during cyclic maintenance activities.

The fourth RIDDOR incident with over seven days lost time was reported in December 2016 as an arm injury.

FB - Amey

No RIDDORs reported for 2016/17.

Health and Safety / Construction Design Management (CDM) Audits

Health and safety audits focusing on BS OHSAS 18001 and contract requirements were carried out by PAG during 2016/17.

CDM audits of specific OC schemes including site visits were also carried out.

NW - BEAR ★★☆☆☆

BEAR's performance improved to good.

A health and safety site audit on A9 at Ballinluig resurfacing scheme confirmed BEAR to be compliant with arrangements operating on site including extensive traffic management arrangements. The OC's management of health and safety provisions remained good.

A CDM audit at the same site identified that the OC has introduced a number of improvements to its CDM duties

SW - Scotland TranServ ★★☆☆☆

Scotland TranServ's performance remained good.

PAG undertook health and safety and CDM audits which included a joint site visit to M8 White Cart Viaduct Cathodic protection maintenance scheme. The processes operating on-site were satisfactory and comprehensive. The health and safety audit identified an issue regarding the non-assigned responsibilities in the OC's delegated health and safety authority register. In addition, a number of other responsibilities which had been delegated to responsible parties were not approved.

The CDM audits confirmed that Scotland TranServ are undertaking its duties as Principal Designer and Principal Contractor and its works processes to monitor subcontractor's

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compliance with CDM 2015. The audits established the necessary verification of the discharge of Transport Scotland's CDM Client obligations.

PAG will monitor this activity closely to establish how performance will be improved in 2017/18.

NE - BEAR ★★☆☆☆

BEAR's performance remained good.

A health and safety audit reviewed the OC's relevant health and safety documentation (processes/procedures) and a detailed investigation into the health and safety provision in four current schemes. BEAR's management of health and safety arrangements remained good and complied with contractual requirements.

The CDM audit determined that the OC has introduced a number of improvements to its CDM processes which have become embedded in the OC operations and associated culture. No suitable site was available to visit at the time of the audit.

SE - Amey ★★☆☆☆

Overall Amey's performance improved to good.

The health and safety audit consisted of the review of the OC's health and safety documentation at Amey's Bilston Glen office. Amey's health and safety management continued to be effective and operates satisfactorily.

The CDM audit included a site visit to the A7 Old Tweed Bridge scheme and confirmed that Amey is undertaking its duties successfully on site with respect to its monitoring and verifying of the CDM regulation requirements.

FB - Amey ★★☆☆☆

Amey's performance remained good.

The PAG health and safety audit identified no findings and Amey's health and safety provision was confirmed to be complying with contractual requirements.

A site visit to the Forth Bridge South Abutment storage facility was conducted as part of the CDM audit. No findings were raised and Amey was observed to be undertaking its duties on site in accordance with CDM regulations.

Environmental management

Environmental management systems (EMS)

A well-implemented and managed EMS demonstrates a commitment to improving environmental performance and protection. It should fulfil the requirements of wide-reaching environmental legislation, and meet stakeholders' expectations for sustainable development.

During the year, EMS audits were completed in all Units by PAG.

NW - BEAR ★★☆☆☆

BEAR's performance remained good.

Overall the OC's EMS was operating satisfactorily; with particular reference to site operations. Two issues were identified during the PAG audit concerning salt storage at Kingussie depot and the incomplete population of waste transfer notes (WTNs).

SW - Scotland TranServ ★★☆☆☆

Scotland TranServ's performance improved from poor to fair. Two issues were identified during the PAG audit concerning oil storage and training. The OC's environmental assessment process was reviewed and found to be well-established and suitably adapted for specific schemes.

Some progress with long-standing environmental issues related to the underdevelopment of Polmadie depot are still to be resolved.

PAG will continue to monitor this activity closely to establish how performance will be improved in 2016/17.

NE - BEAR ★★☆☆☆

BEAR's performance improved to excellent.

Overall the OC's EMS was operating very well. No issues were identified at the PAG audit. Waste and material at depots were suitably stored and WTNs populated correctly.

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SE - Amey ★★☆☆☆

Amey's performance reduced from good to fair.

Two findings were identified during the PAG audit both concerning the storage of chemicals on site and at Burghmuir depot. One issue in relation to unidentified waste streams was also identified at the depot.

The OC's environmental assessment process was reviewed and found to be comprehensive with mitigation measures appropriately identified.

PAG will monitor this activity closely to establish how performance will be improved in 2017/18.

Overall Amey's EMS was operating well.

FB - Amey ★★☆☆☆

Amey's performance remained fair.

In general, the OC's environmental review process is well established with mitigation measures implemented on site.

One finding was identified during the PAG audit concerning the storage of chemicals at South Queensferry depot. A number of other issues in relation to unidentified/overflowing waste streams and the incomplete population of WTNs were also identified.

The OC's environmental monitoring of the depot had previously picked up the issues relating to the storage of waste and chemicals and remedial action was taken. However, these issues were still evident at the PAG audit.

PAG will continue to monitor this activity closely to establish how performance will be improved in 2017/18.

4.2 Continuous improvement-management systems

Resolving problems and improving performance

Management systems are required to continually improve the effectiveness and efficiency of an organisation. This is achieved by identifying areas for improvement to the organisation's processes.

The OCs are, therefore, required to regularly monitor and verify their activities through testing, inspecting and auditing. They should then action where necessary to prevent use and recurrence.

PAG monitors the OCs' systems and uses an escalation process to ensure issues are resolved (see Figure 4-04).

Where an issue is escalated to either NNC or remedial notice the OC is required to manage the default in accordance with its QMS within the specific timescale.

The OCs should respond positively to these notices, rectify the immediate problems and improve their overall effectiveness.

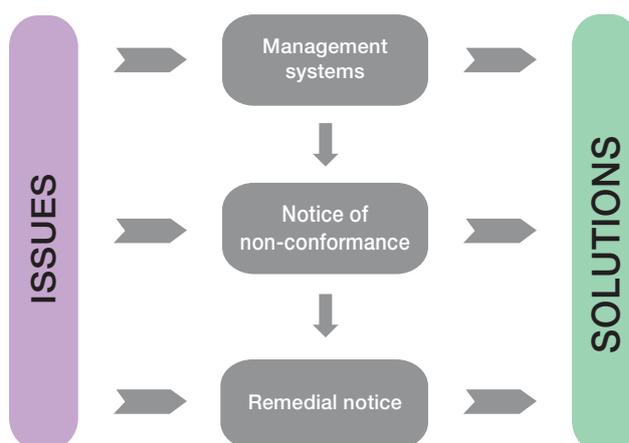


Figure 4-04 - Escalation process

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OC performance

In total six remedial notices were issued by Transport Scotland, three in SW, two in NE and one in SE, (Figure 4-05). One remedial notice raised in NW in 2015/16 remains open. A remedial notice issued to SW in 2013/14 relating to insurances was rescinded following discussions between Scotland TranServ and Transport Scotland.

The overall number of remedial notices is equivalent to last year. The number of NNCs has reduced considerably from previous years and represents the lowest overall total since the 4G contracts commenced (Figure 4-06).

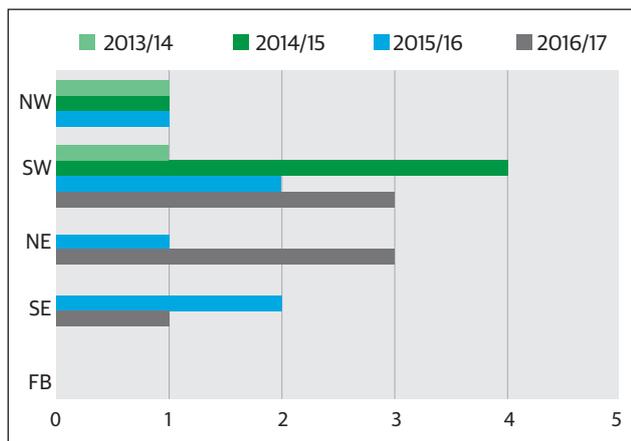


Figure 4-05 - Number of remedial notices issued

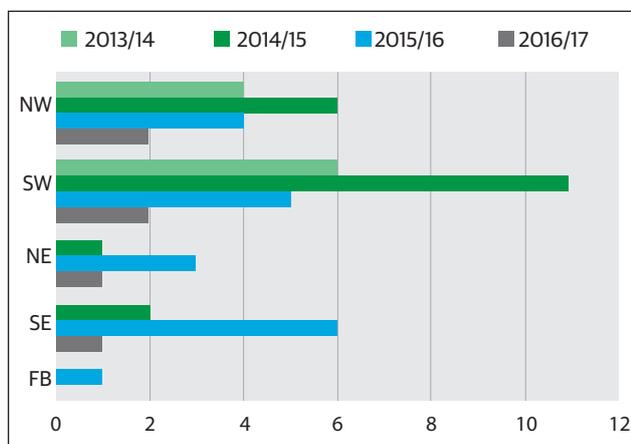


Figure 4-06 - Number of NNCs issued

NW - BEAR ★★☆☆☆

BEAR's performance improved to fair. Two NNCs were raised during the reporting period 2016/17. No remedial notices were raised, but a remedial notice relating to road markings and road studs remains open from 2015/16. It was determined by PAG that the OC is developing a new in-house road markings team that should address the remedial notice in the year 2017/18.

PAG will continue to monitor this activity closely to establish how performance will be further improved in 2017/18.

SW - Scotland TranServ ★☆☆☆☆

Scotland TranServ's performance continued to be very poor. Two NNCs and three remedial notices were issued. The remedial notices were raised for failure in completing and submitting principal inspection reports, lack of progress in resolving structures cyclic maintenance issues and the identification and repair of category 1 lighting defects. Some progress towards closing out the two structures related remedial notices occurred during the year. The category 1 lighting defects remedial notice was issued in March 2017.

Transport Scotland and PAG will continue to work very closely with the OC to establish how performance will be improved in 2017/18.

NE - BEAR ★★☆☆☆

BEAR's performance improved to fair with one NNC and two remedial notices raised. The remedial notices related to lack of delivery of documents on a bridges scheme and establishing a salt store to contractual requirements at the Errol depot.

PAG will continue to monitor this activity closely to establish how performance will be further improved in 2017/18.

SE - Amey ★★☆☆☆

Amey's performance improved to good. One remedial notice and one NNC was raised. The remedial notice was raised both for failure to install fencing to the specified standard and to ensure that CDM regulations were fulfilled.

FB - Amey ★★★★★

Amey's performance improved to excellent. No remedial notices or NNCs were raised during the reporting period.

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Performance measurement

Performance measurement

The OCs' performance in the management and maintenance of the network is measured by a set of 20 PIs in the West, 22 PIs in the East, 38 PIs in FB and 21 MIs in all Units except for FB which has 23 MIs.

The performance measurement indicators agreed with the Scottish Ministers are calculated using standard methods of measurement developed by PAG.

Summary of performance measurement

PAG monitors all performance indicators throughout the year and works with the OCs to address any poor performance.

Transport Scotland and PAG set thresholds for the performance indicators, which are reviewed annually to help drive continuous improvement.

Descriptions of the PIs can be found in the contract. These are summarised in Figure O4-07 and are cross-referenced within this report where appropriate.

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	Unit			PI Name
	NW/SW	NE/SE	FB	
PI Number	0	0	0	Overall Performance Indicator
	1	1	1	RIDDOR (Reporting of Injuries, Diseases and Dangerous Occurrences Regulations)
	2	2	2	Accident Frequency Rate
	3	3	3a	Repair of Category 1 Defects
			3b	Repair of Category 1 Defects Forth Road Bridge
	4	4	4	Incident Response
	5	5	5	Safety Inspections and Patrols
	6	6	6	Detailed Inspections
	7	7	7	Maintenance
	8	8	8	Structures Principal Inspections
	9	9	9	Structures General Inspections
			10	Forth Road bridge inspections
			11	Queensferry Crossing Inspections
	10	10	12a	Structures maintenance
			12b	Structures Maintenance Forth Bridge
	11	11	13	Winter Service treatments
	12	12	14	Actual spend against profile
	13	13	15	Works Contracts cost estimates
	14	14	16	Works Contracts out turn cost
	15	15	17	Closure of Non-Conformances
	16	16	18	Submission of reports
	17	17	19	Planning applications
	18	18	20	Communications response
	19	19	21	Carbon emissions
			22	Grassed area
		23a	Recording Inventory Condition Rating	
		23b	Recording Inventory Condition Rating Forth Bridge	
		23c	Recording Inventory Condition Rating Queensferry Crossing	
		24	Community Engagements and Community Benefits	
		25	Queensferry crossing Structural Health Monitoring System Report	

Figure 4-07- List of PIs

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PI Number	Unit			PI Name
	NW/SW	NE/SE	FB	
PI Number			26	Queensferry Crossing Supervisory Control and Data Acquisition System Maintenance
			27a	Access Systems inspection - Forth Bridge
			27b	Access Systems maintenance and testing - Forth Bridge
			28a	Access Systems inspection - Queensferry Crossing
			28b	Access Systems maintenance and testing - Queensferry Crossing
			29	Programmed Special Inspections - Forth Bridge
			30	Internal audits
			31	Scheme Closure in CCMf

Figure 4-07- List of PIs (Continued)

Performance measurement - continual improvement

None of the OCs reported PI 19 in 2015/16 due to ongoing discussions between the OC and Transport Scotland on methods for reporting the PI.

Figure 04-08 - Figure 04-17 summarise performance against each benchmark PI along with PI results for 2015/16 inset.

NW - BEAR

In comparison to 2015/16, the performance of BEAR remained consistent with the exception of PI 07 which declined in 2016/17.

SW - Scotland TranServ

In comparison to 2015/16, the performance of Scotland TranServ improved in 2016/17.

NE - BEAR

In comparison to 2015/16, the performance of BEAR improved slightly in 2016/17. In addition to PI 19 and 21 (recording inventory condition rating) were not reported during the annual period.

SE - Amey

In comparison to 2015/16, the performance of Amey improved slightly in 2016/17.

FB - Amey

Eights PIs were not measured during the annual period. Of these, six PIs (11, 23c, 25, 26, 28a and 28b) relate to the Queensferry Crossing and are not yet applicable. The other two PIs were: PI 21 measurement of carbon emissions (which was due to be submitted in June 2016) and PI 31 scheme closure in CCMf. PI 00 which is the overall performance indicator was not submitted until February 2017. In comparison to 2015/16, the performance of Amey improved slightly in 2016/17.

The performance measurement indicators not referenced elsewhere in this report can be categorised as reporting and communications (PIs 16 and 18) and dealing with planning applications (PI 17). All OCs exceeded the threshold target for these PIs.

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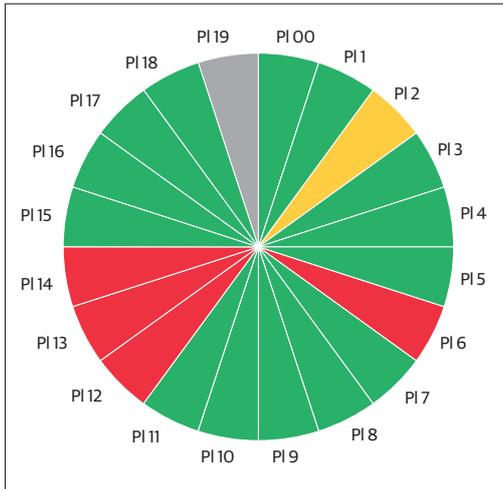


Figure 4-08 – PI summary for NW 2016/17

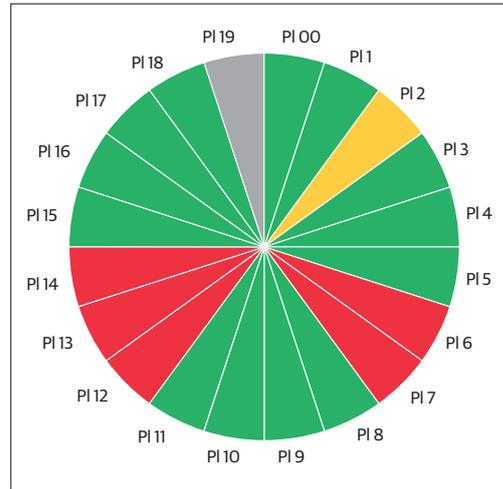


Figure 4-09 – PI summary for NW 2015/16

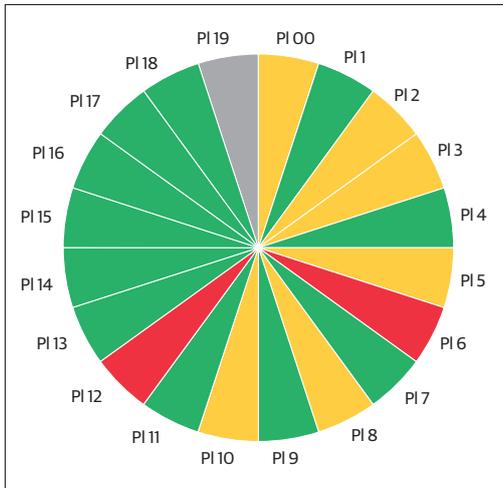


Figure 4-10 – PI summary for SW 2016/17

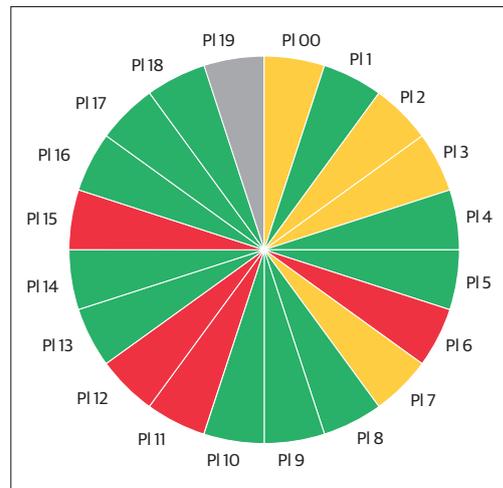
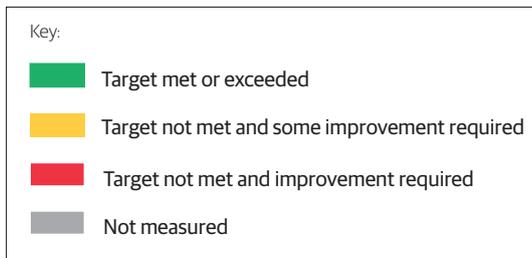


Figure 4-11 – PI summary for SW 2015/16



Chapter 4

Quality of service

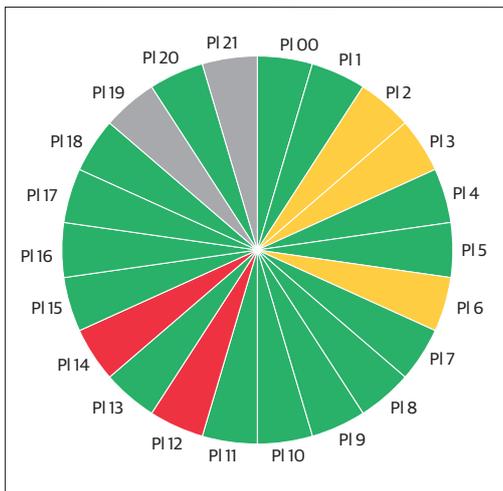


Figure 4-12 - PI summary for NE 2016/17

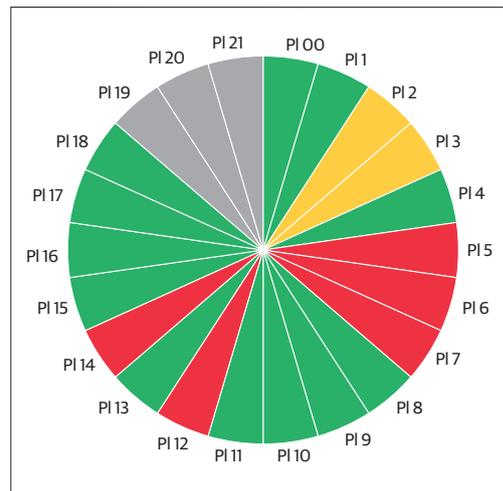


Figure 4-13 - PI summary for NE 2015/16

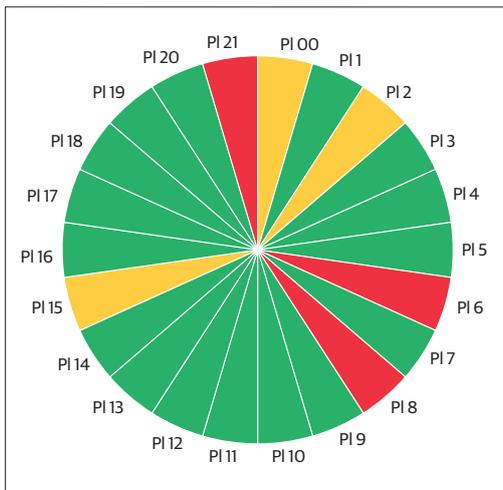


Figure 4-14 - PI summary for SE 2016/17

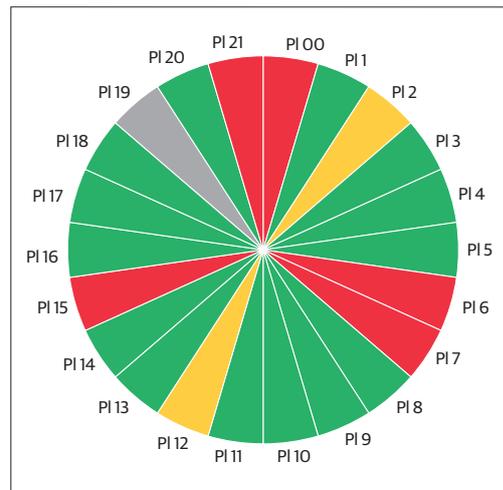


Figure 4-15 - PI summary for SE 2015/16

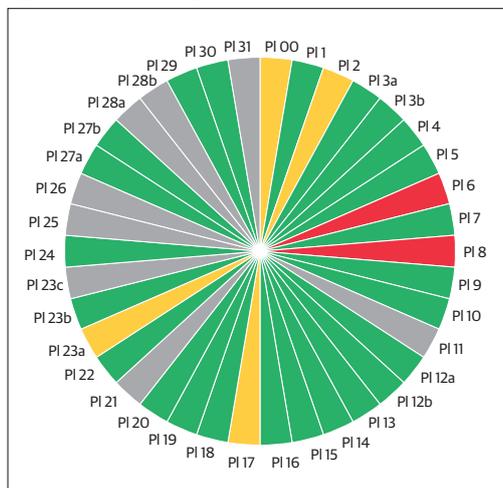


Figure 4-16 - PI summary for FB 2016/17

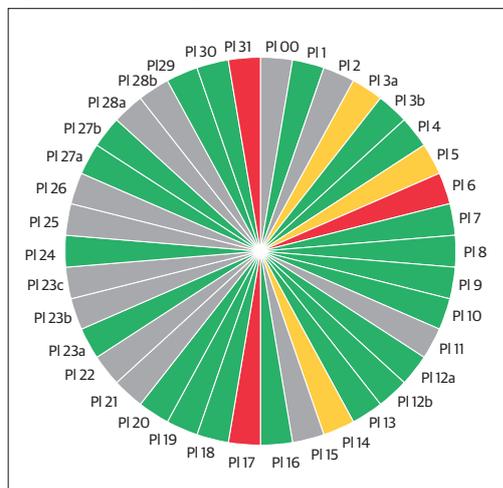


Figure 4-17 - PI summary for FB 2015/16

Chapter 5

Value of service

Key points

Financial spend

- OC 4G spend overall was under budget by £0.9m. SW accounted for £1.5m, NE £0.5m and SE £0.4. NW spend exceeded budget by £1.5m. There were also differences between spend and budget at budget level category across all Units.
- OC performance in managing the budget was good except in NW and SW where performance was fair. All OCs had issues with monthly profiling of spend.
- The OCs' performance in managing the bid/order process was good except in SW and SE where performance was fair.

Financial management

- OC performance in submitting financial information, such as works contractor invoices and expenditure profiles, was excellent in all Units.
- OC performance with general financial management was good in all Units, although performance in NE and SE dipped from excellent.

Commercial matters

- OCs performance in managing measurement process was good except in SW where performance was fair. There were issues with provision of records and OC review comments.
- Performance in dealing with claims was good in FB and SE. Performance was fair in NW, SW and NE with the OCs failing to fully comply with the claim notification process.

Chapter 5

Value of service

5.1 Financial spend

5.1.1 Budget, orders and spend

PAG monitors and reports on the inter-relationship of budget, orders and spend to assist Transport Scotland in its financial management. How this fits into the overall process is shown in Figure 5-01.

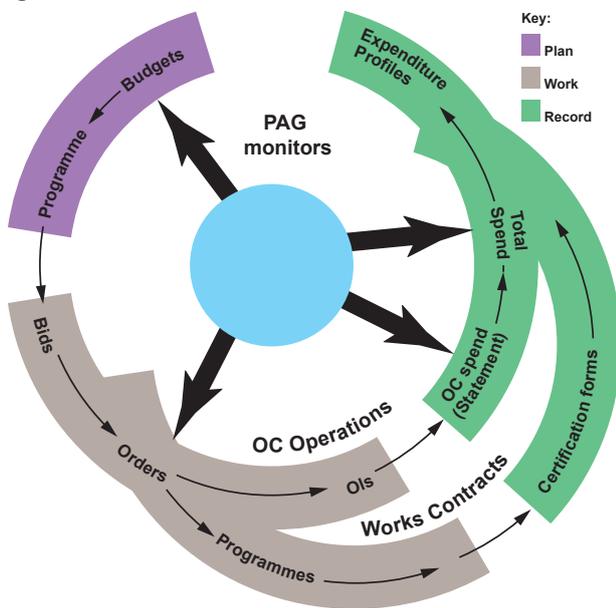


Figure 5-01 - Financial monitoring process

Budgetary control

The OCs have responsibility for delivering a programme of maintenance covering five budget categories, these are routine maintenance (RM), structural maintenance (SM), structures (STR), minor improvements (MI) and strategic road safety (SRS).

A comparison of spend against budget for 2016/17 is shown in Figure 5-02.

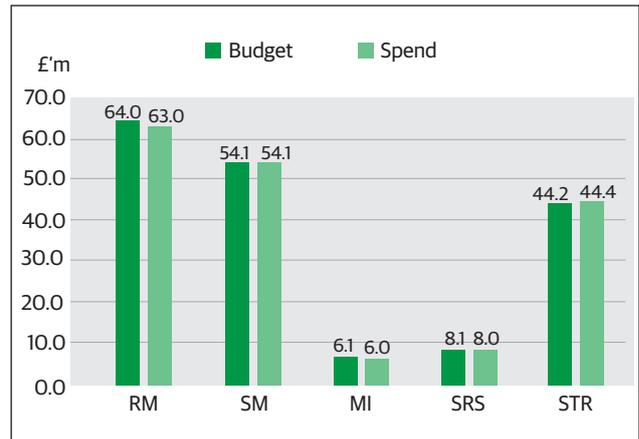


Figure 5-02 - Spend v Budget (excluding CPF) - all Units

Spend overall was less than budget by £0.9m with the under spend against routine maintenance of £1.0m (2%) (Figure 5-02).

NW - BEAR ★★☆☆☆

Overall performance reduced to fair with budget over spent by £1.5m (3%). Figure 5-03 shows how the OC managed its budget at budget category level.

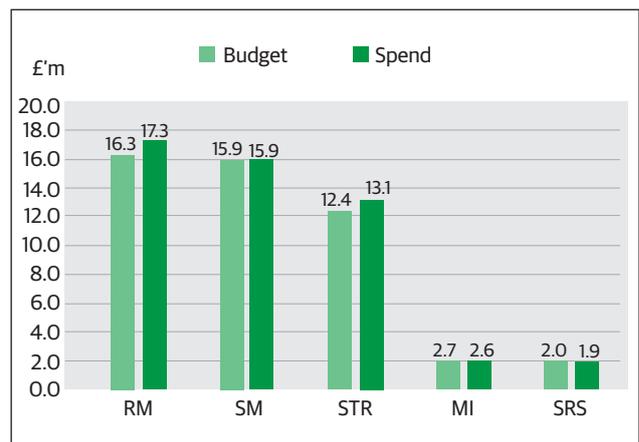


Figure 5-03 - NW Budget v Spend (excluding CPF)

Figure 5-03 highlights budget over spend against routine maintenance at £942k (6%) and structures at £670k (5%). The main area where the OC requires to improve is in the provision of accurate expenditure profiles.

PAG will monitor this activity closely in 2017/18.

Chapter 5

Value of service

SW – Scotland TranServ ★★☆☆☆

Overall performance continued to be fair with budget under spent by £1.5m (3%). Figure 5-04 shows how the OC managed its budget at budget category level.

This highlights the under spend relates to routine maintenance at £753k (5%), structural maintenance at £423k (3%) and structures at £244k (2%).

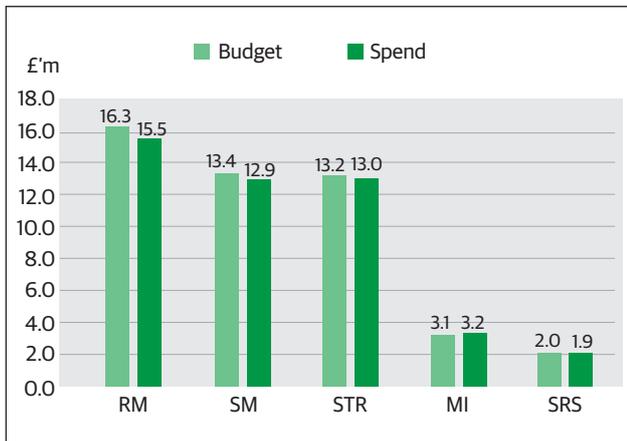


Figure 5-04 – SW Budget v Spend (excluding CPF)

The main area where the OC requires to improve is in the provision of accurate expenditure profiles.

PAG will monitor this activity closely in 2017/18.

NE – BEAR ★★☆☆☆

Overall, performance remained good with budget under spent by £467k (2%). Figure 5-05 shows how the OC managed its budget at budget category level.

This highlights the under spend relates to routine maintenance at £372k (3%) and structural maintenance at £107k (1%). The main area where the OC requires to improve is in the provision of accurate expenditure profiles.

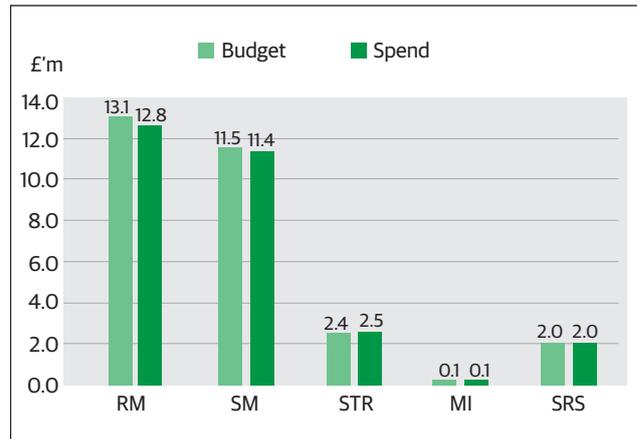


Figure 5-05 – NE Budget v Spend (excluding CPF)

SE – Amey ★★☆☆☆

Overall, performance remained good with budget under spent by £424k (1%). Figure 5-06 shows how the OC managed its budget at budget category level.

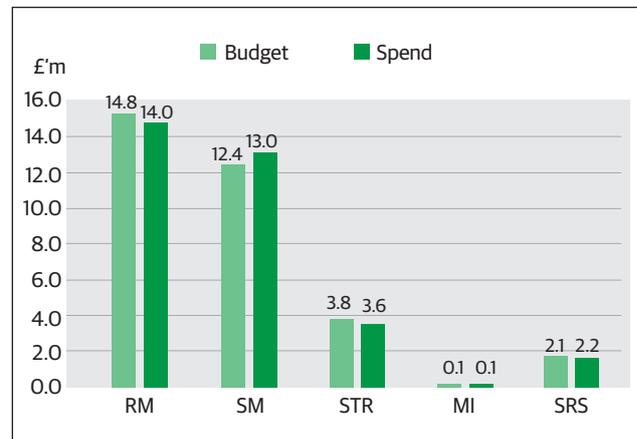


Figure 5-06 – SE Budget v Spend (excluding CPF)

Figure 5-06 highlights that the under spend was against routine maintenance at £783k (5%) and structures at £271k (7%) partly offset by an over spend of £567k (5%) against structural maintenance.

The main area where the OC requires to improve is in the provision of accurate expenditure profiles.

Chapter 5

Value of service

FB – Amey ★★★★★☆

Performance remained good with budget in line with spend. Figure 5-07 shows how the OC managed its budget at budget category level.

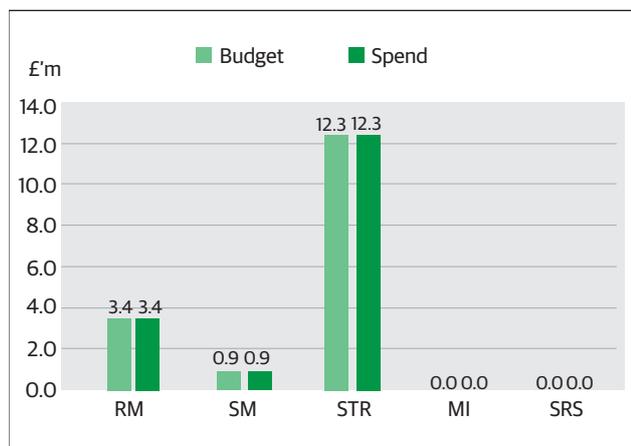


Figure 5-07 – FB Budget v Spend (excluding CPF)

The main area where the OC requires to improve is in the provision of accurate expenditure profiles.

Orders v spend

The responsibility to ensure that the value of orders issued by Transport Scotland matches its annual budgets and subsequent spend rests with the OCs.

Pressures on this process are inevitable due to operational demands changing and work already bid and ordered not proceeding. These changes may have a significant impact on the financial outturn if not managed through the contractual requirements for submitting revised bids. This process should ensure ordered work does not exceed budget.

PAG monitored the OCs’ financial management performance throughout the year and reviewed whether spend for each scheme exceeded order value. PAG also reported on variances between budget.

NW – BEAR ★★★★★☆

BEAR’s performance improved to good. However, performance dipped in the last quarter of the financial year with spend exceeding orders.

SW – Scotland TranServ ★★★★★☆

Overall, performance reduced to fair. There were frequent issues of spend exceeding orders.

PAG will monitor this activity closely to establish how performance will be improved in 2017/18.

NE – BEAR ★★★★★☆

Overall, performance remained good, with spend exceeding orders, particularly in the last quarter of the financial year.

SE – Amey ★★★★★☆

Overall, performance reduced to fair. There were issues with bids not being submitted for changes in scheme costs, particularly in the last quarter of the financial year.

PAG will monitor this activity closely to establish how performance will be improved in 2017/18.

FB – Amey ★★★★★☆

Overall, performance remained good. There were issues with spend exceeding orders particularly in the last quarter of the financial year.

5.2 Financial management

5.2.1 Submission of financial information

NW – BEAR ★★★★★★

Overall performance improved to excellent with all financial submissions being received within contractual timescales.

SW – Scotland TranServ ★★★★★★

Performance improved to excellent with all financial submissions being received within contractual timescales.

NE – BEAR ★★★★★★

Overall performance remained excellent.

SE – Amey ★★★★★★

Overall performance remained excellent.

FB – Amey ★★★★★★

Performance remained excellent with all financial submissions being received within contractual timescales.

Chapter 5

Value of service

5.2.2 General financial management

NW – BEAR ★★★★★☆

BEAR's performance remained good, although there was slow progress in closing out some financial issues.

SW – Scotland TranServ ★★★★★☆

Scotland TranServ's performance improved to good. There were some minor issues in closing out schemes.

NE – BEAR ★★★★★☆

Overall BEAR's performance reduced to good with slow progress in closing out some financial issues.

SE – Amey ★★★★★☆

Performance remained good, although there were some minor issues in closing out schemes.

FB – Amey ★★★★★☆

Performance remained good, although there were some minor issues in closing out schemes.

5.3 Commercial matters

PAG continued to monitor the OCs' measurement processes. Issues raised were discussed and resolved through regular meetings. Where appropriate, monies were deducted from the OCs for failure to substantiate values claimed.

5.3.1 Measurement issues

Measurement process

PAG carries out detailed reviews on OC spend through a process of site visits and reviews of measurement records held at the OCs' central offices. Given the volume of work undertaken by the OCs, PAG work is carried out on a sample basis with typically 10% (by value) of operations reviewed. The aim of these reviews is to ensure the OCs' measurement processes are robust and accurately record amounts due through their monthly statements.

NW – BEAR ★★★★★☆

Overall performance remained good, although as in the previous year, some issues were noted with measurement records and OC review comments.

SW – Scotland TranServ ★★★★★☆

Overall performance reduced to fair. Issues were noted with both measurement records and OC review comments.

NE – BEAR ★★★★★☆

Overall performance remained good.

However, as in the previous year, some issues were noted with both measurement records and OC review comments.

SE – Amey ★★★★★☆

Amey's performance overall remained good. However, as in the previous year, some issues were noted with measurement records.

FB – Amey ★★★★★☆

Amey's performance overall remained good. However, some issues were noted with measurement records, method of measurement and OC review comments.

5.3.2 Claims

Claims

Given the wide ranging requirements of the 4G contracts, it is inevitable that issues will arise around claims for additional cost and contract interpretation.

Transport Scotland term maintenance contracts include clauses to ensure claims are resolved within a reasonable timeframe. The OCs are required to meet timescales for claim notification and to provide detailed supporting information to Transport Scotland.

NW – BEAR ★★★★★☆

Overall performance improved to fair.

A number of claims arose during the year which BEAR made efforts to resolve.

PAG will monitor this activity closely to establish how performance will be improved in 2017/18.

Chapter 5

Value of service

SW – Scotland TranServ ★★☆☆☆

Overall performance improved to fair.

Several commercial matters were resolved during the year, although there were some issues related to adherence with Contractual Claims protocol.

PAG will monitor this activity closely to establish how performance will be improved in 2017/18.

NE – BEAR ★★☆☆☆

Overall performance improved to fair.

A number of claims arose during the year or remained unresolved from the previous year. BEAR has made efforts to progress these issues.

PAG will monitor this activity closely to establish how performance will be improved in 2017/18.

SE – Amey ★★☆☆☆

Overall performance improved to good.

One claim was resolved during 2016/17. One further claim was notified in accordance with the notification process.

PAG will monitor this activity closely in 2017/18.

FB – Amey ★★☆☆☆

Overall performance remained good.

One claim was resolved during 2016/17. No further claims arose during the year.

Frequently asked questions

What is the Performance Audit Group (PAG)?

CH2M, working in association with PricewaterhouseCoopers was re-appointed through competitive tendering by Transport Scotland for a fourth seven-year term from December 2016. CH2M and PricewaterhouseCoopers monitor performance on the five Units.

What is PAGs' role?

PAG audits, monitors and reports on the financial, technical and performance aspects of the OCs to a plan agreed with Transport Scotland. PAG also reviews payment requests from the OCs and carries out inter-Unit comparisons and value for money investigations at the request of Transport Scotland. PAG can escalate the auditing and monitoring of the OCs if performance issues are identified.

PAG assisted Transport Scotland in the development of the fourth generation trunk road maintenance contracts.

What is a trunk road?

The primary transport functions for the national strategic transport network are defined as

- Linking major urban centres and areas of population change
- Providing links to international gateways, airports, ports and borders
- Linking remoter communities
- Linking key tourist areas
- Facilitating freight routes
- Linking areas of economic activity and regeneration areas of national significance.

All motorways and some A-roads are designated as trunk roads.

Are trunk roads managed and maintained in a different way to other roads?

Yes. Trunk roads are the responsibility of and funded by the Scottish Ministers. As such they are managed by Transport Scotland, maintained by the OCs and monitored by PAG. Local authorities are responsible for managing, maintaining and monitoring the local non-trunk road network.

What is Transport Scotland?

Transport Scotland is the Scottish Government's national transport agency responsible for helping to deliver the Government's capital investment programme and overseeing the safe and efficient running of Scotland's trunk roads.

What are Transport Scotland's responsibilities for trunk roads?

Transport Scotland is responsible to the Scottish Ministers for overseeing the management, maintenance and improvement of the trunk road network. To assist with this, it employs OCs, works contractors, concession companies and PAG.

What are OCs?

The OCs are responsible for delivering the management and maintenance of the trunk road network in each Unit, working under contract to Transport Scotland.

What are the OCs' main tasks?

The OCs oversee, coordinate and undertake cyclic and routine maintenance, winter service and emergency response. In addition, they undertake bridges and structural road maintenance, bridge strengthening and replacement, safety and condition inspections, road safety and minor improvement schemes.

What else do the OCs do?

The OCs also oversee and coordinate maintenance works carried out by contractors, and coordinate works by utility companies (statutory undertakers).

The OCs

- undertake day-to-day management of the Unit
- provide professional and design services, including scheme preparation
- carry out surveys, inspections and investigations
- manage and supervise operations and works contracts
- manage their allocated budgets
- report to Transport Scotland.

Frequently asked questions

What work is not done by the OCs?

There are certain maintenance and information management services carried out on the network that are not the OCs' responsibility.

These include:

- Maintenance of M74/A74(M) from J12 to the English border, which is the responsibility of Autolink under the terms of the M6 DBFO project.
- Maintenance of M77 PPP project, which is the responsibility of Connect.
- Maintenance of M80 DBFO project is the responsibility of Highway Management (Scotland) Ltd.
- Maintenance of M8 M73 M74 Motorway Improvements Project DBFO is the responsibility of the Scottish Roads Partnership (SRP) consortium.
- Maintenance of AWPR – Balmeddie-Tipperty NPD Project is the responsibility of the Aberdeen Roads Partnership.
- Maintenance of Traffic Scotland electrical equipment such as variable message signs, emergency telephones, permanent speed cameras and associated cabling.
- Collection of traffic data and maintenance of counting equipment.
- Major trunk road improvements built by contractors appointed by Transport Scotland. Maintenance responsibility for these improvements is split between the contractor and the OC for a set period, up to five years, prior to full responsibility passing to the OCs.

This report does not include an assessment of these other maintenance organisations.

Where can I find out more about the management and maintenance of the M6 DBFO, M77 DBFO, M8 M73 M74, AWPR – B-T and M80 DBFO projects?

For M6, contact:

Autolink Concessionaires (M6) plc
M6 DBFO Project Office
Nethercleugh
Lockerbie
Dumfriesshire
DG11 2SQ

For M77, contact:

Connect M77/GSO plc
Connect Roads Operations Centre
Maidenhill Interchange
Ayr Road
Glasgow
G77 6RT

For M8/M73/M74, contact:

Scottish Roads Partnership
Hermiston House, Unit B
M8 Central Business Park
Greenhouse Road
Newhouse
Motherwell
ML1 5FL

For M80, contact:

Highways Management (Scotland) Ltd
c/o Bilfinger Project Investments Europe
Pavilion 2
Buchanan Park
Stepps
Glasgow
G33 6HZ

For AWPR, contact:

AWPR Project Office
New Mains of Ury
Stonehaven
Aberdeen
AB39 3QA

Glossary of Terms

4G contracts

Fourth generation contracts which were tendered in two phases. NW and SW were tendered first and commenced on 1 April 2013. NE and SE commenced on 16 August 2014. Subsequently FB was also introduced on 1 June 2015.

Automated diary facility

The Automated Diary Facility (ADF) is a web-based roadworks diary provided by Traffic Scotland as part of the Scottish Minister's Term Contract for Management and Maintenance of the Scottish Trunk Road Network. The ADF provides the ability for the OC to input and edit planned roadworks traffic management, lane closures, lane occupations and events likely to cause traffic delays.

Abnormal load

An item which, when loaded on the carrying vehicle, exceeds critical weight or size parameters given in legislation and cannot be broken down into smaller components (also referred to as Abnormal Indivisible Load).

Budget

Money allocated by Transport Scotland to manage and maintain the network during a financial year. This includes operations and works contracts.

Category 1 defects

Serious asset faults, such as potholes, that should be repaired within set timescales.

CEEQUAL

An evidence-based sustainability assessment, rating and awards scheme for civil engineering, infrastructure, landscaping and the public realm, indicating the achievement of high environmental and social performance.

Contract control and management function (CCMf)

A computer-based financial management system supplied by Transport Scotland and operated by the OCs. The system gives everyone working on the OC contracts, including Transport Scotland and PAG, relevant access to information about how operations and works contracts are being managed and where money is being spent.

Contract price fluctuation factor (CPF)

Inflation adjustments to the OCs' tendered rates and prices.

Financial year

The period between 1 April 2016 and 31 March 2017.

Integrated road information system (IRIS)

The road information system provided by Transport Scotland and used by the OCs in 4G, which includes the functionality of CCMf, RMMf, SMS and data on the physical characteristics, condition of the trunk road network and accidents.

Monitoring indicators and Performance indicators

The contracts state that a list of indicators must be provided by the OCs to show how they are performing and to allow comparisons between Units.

Network

The system of motorways and trunk roads in Scotland. The network is 3,135km long and varies from urban motorways to rural single carriageways (see Figure 1). In addition, a total of 198km of motorway is covered by the M6 DBFO, M77 DBFO, M8/M73/M74 DBFO, M80 DBFO and AWPR projects.

Notice of non-conformance (NNC)

The process used in the contract to flag up where the OCs are not complying with the contract. This is issued by PAG.

Operations

Work carried out by the OCs.

Orders

Instructions issued by Transport Scotland to the OCs. These give details of operations (not works contracts) to be carried out under the contract by the OCs. The OCs should not start operations until an order has been issued.

Pavement

Spend related to carriageways and footways.

Quality management system (QMS)

Quality management is fundamental to the contracts. A QMS is drawn up by each OC to show how it will carry out every function required of it under the contract.

Glossary of Terms

Remedial notice

A procedure used under the contract where Transport Scotland can issue a notice when an OC commits a default. This is part of the performance management procedures and may lead to withholding amounts from payment.

Routine maintenance management function (RMMf)

A computer-based system supplied by Transport Scotland and operated by the OCs, to record and report on details of the network, including where it has been inspected and routinely maintained.

Sector scheme

Sector scheme certification is given to suppliers and installers of materials by United Kingdom Accreditation Service (UKAS) accredited certification bodies. This certifies that the holder operates a QMS in line with the international standard, BS EN ISO 9001:2008 and the sector scheme document.

Spend

The amount paid for work done, including OC operations and works contracts, excluding CPF.

Statements of intent (SOI)

These are reports prepared by the OCs to support their bids to carry out work on the network. The SOIs include scheme justification, possible options, cost estimates and recommended treatment.

Structures management system (SMS)

A computer based management system containing an inventory of information on all trunk road structures.

Sustainability

Sustainability in trunk road maintenance and improvement allows for an enhanced network consistent with social needs, permitting environmental stewardship, improving safety, promoting efficiency and meeting the mobility requirements of current and future generations.

Traffic Scotland

Traffic Scotland enables the collection and distribution of real-time traffic information relating to incidents and events currently taking place on the Scottish trunk road network.

TS2010

A specification for a new quieter and more durable road surfacing material.

Unit

The network is divided into five separate geographic Units. These are: NW, SW, NE, SE and FB.

Works contracts

Schemes usually with a value of more than £350k and below £5m, which the OCs design, procure through competitive tender and supervise on site.

Abbreviations

4G	Fourth generation	NNC	Notice of non-conformance
ADF	Automated diary facility	NW	North West
BS	British Standard	OC	Operating Company
CCMF	Contract control and management function	OHSAS	Occupational health and safety assessment series
CDM	Construction design management	ORI	Observation resulting from inspection
CEEQUAL	Civil engineering environmental quality assessment and award scheme	PAG	Performance audit group
CPF	Contract price fluctuation	PI	Performance indicators
DBFO	Design, build, finance and operate contract	QMS	Quality management system
EMS	Environmental management system	RIDDOR	Reporting of injuries, diseases and dangerous occurrences regulations
EN	European standard of the CEN	RMMF	Routine maintenance management function
FB	Forth Bridges	SE	South East
H&S	Health and safety	SEPA	Scottish Environment Protection Agency
HSE	Health and safety executive	SMS	Structures management system
IRIS	Integrated road information system	SRWR	Scottish Road Works Register
ISO	International Standards Organisation	SW	South West
LED	Light emitting diode	TRISS	Trunk road incident support service
MI	Monitoring indicators	WTN	Waste transfer note
Mol	Management of Incident database		
NE	North East		

Useful websites

PAG

www.performanceauditgroup.co.uk

CH2M

www.ch2m.com

PricewaterhouseCoopers

www.pwc.co.uk

Transport Scotland

www.transportscotland.gov.uk

Traffic Scotland

www.trafficscotland.org

Scottish Road Works Commissioner

www.roadworksscotland.gov.uk

Scottish Government

www.scotland.gov.uk

Scottish Parliament

www.scottish.parliament.uk

Amey

www.amey.co.uk/

BEAR

www.bearscot.com

Scotland TransServ

www.scotlandtranserv.co.uk

