PAG Team

TRANSPORT SCOTLAND
CÒMHDHAIL ALBA

Turner & Townsend

Performance Audit Group's Annual Report 2018/19

An independent public report on Scotland's trunk road maintenance

making the **difference**

amey

BEAR SCOTLAND

ScotlandTranServ
A Balfour Beatty Mouchel Joint Venture

Foreword

Richie Hales
Director
Turner & Townsend
November 2019

This is the Performance Audit Group's (PAG) annual report on the management and maintenance of Scotland's trunk road network for 2018/19.

PAG's role is to audit, monitor and report on the performance of the Operating Companies (OCs) and this report summarises the extensive work carried out by the PAG multi-disciplinary team throughout the year.

2018/19 is the second year of the PAG service being delivered by Turner & Townsend as we build on the groundwork prepared in the previous period to add further value to the road user.

Turner & Townsend are a global, independent professional services business, offering independent advice, safeguarding the commercial interests of clients embarking on asset improvement & investment programmes across infrastructure, real estate and natural resources. Turner & Townsend are supported in the delivery of the PAG service by PWC & the Waterman Group.

As the Turner & Townsend appointment continues to mature, the PAG team is working ever closer with Transport Scotland and the OCs to raise standards and provide a safe and reliable network. Our collective focus is to deliver:

- Quality of Service for Trunk Road Customers
- Asset Enhancement and Continuous Improvement of Service
- Value for Money and collectively deliver sustainable value to all stakeholders

The PAG team's approach to the commission is driving improvements through independent constructive challenge and continuous improvement with the focus on outcomes being at the forefront of all decisions.

We are taking great pride in playing our part in delivering a great road user experience and we trust you find our latest report clear, comprehensive and informative.

Facts and Figures

Total length of road
3,145 km

Total number of structures
4,295

Renewing

636km of new road surfacing lane

13km of safety fence installed/renewed

7,862 road lights upgraded to LED

1km of carriageway drainage constructed/renewed

17km of filter drain constructed, 3 km of filter stone replaced

Operating

57,508 tonnes tonnes of salt spread in winter season

17,427 incidents incidents responded to on the trunk road network

Maintaining

£77.6m spent on road pavement surfacing and deeper inlay schemes

£16.6m spent on renewal/replacement of various non-pavement trunk road assets (safety barriers, drainage schemes, road markings and signage)

£62.9m spent on maintenance of highway bridges and structures (such as renewing waterproofing layers to protect the structure, renewing worn expansion joints)

£5.9m spent on network cyclic maintenance including 91,999 gullies, 68,616 Manholes and Catchpits, 114,487 Traffic signs, and 34 million m2 of grass.

£0.6m spent on structures cyclic maintenance including cleaning drainage, bridge joints, clearing vegetation and graffiti, checking safety fences.

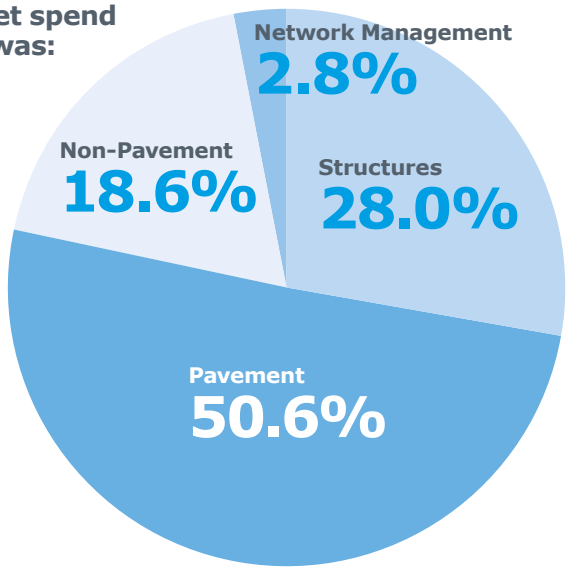
Executive Summary

Finance

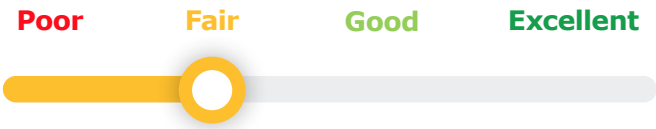
Transport Scotland's 4G contracts have generated savings through competitive procurement process when compared to prices under its previous contracts for like operations.

The budget for **2018/19** was **£216.3m** up **£19.8m** **10.1%** from the previous year (£196.5m)

Budget spend split was:



On **budgetary control**, all units were found to have a fair performance for on month to month accuracy of Budget, Spend and Programmes.



A good performance was noted for FB unit in **Bids and Order vs Spend** with all other units achieving a fair performance.

Savings of **£4.2m** were delivered during **2018/19**

£32.1m delivered to date over the life of the 4G contracts.

Executive Summary

Network Maintenance

Safety Inspections: Only SW and FB units achieved 100% compliance in undertaking safety inspections on time.

PAG monitoring exercises of **Category 1 defects raised** noted an excellent performance in FB unit.

A good performance in SW unit.

And a fair performance in NW, NE and SE units.

For Repair of **Category 1 defects within contractual timescales** NW and FB units achieved a good performance.

Whilst in SW, NE and SE units, performance was fair.

Detailed Inspections: were generally poor in all units, although improvements were noted across the course of the year, they still fell below performance levels required. Issues were noted in the requirement to include an asset condition rating for each asset in the IRIS database with all units performing poorly.

PAG carried out site visits on a variety of maintenance operations and found the quality of **Routine Maintenance** to be good in all units.

Monitoring exercises undertaken on site by PAG on a variety of **Cyclic Maintenance activities** found overall performance to be good in NE and SE units.

And fair in NW and SW units.

PAG did note performance issues in all units in cyclic drainage maintenance.

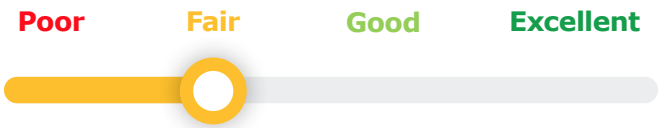
Performance in **Electrical Maintenance** was mixed with a poor performance noted in SW unit.

Fair in NE and SE units.

Good in NW and FB units.

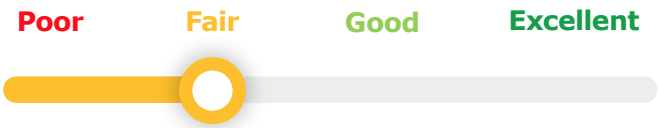
Executive Summary

Reviews of **Principle and General Inspections** of structures found a fair performance across all units.

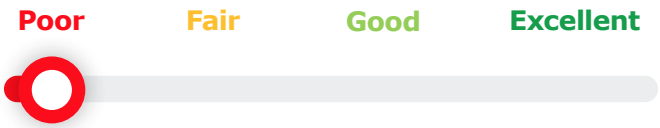


Reviews undertaken in the quality of **Cyclic Maintenance** to structures found a good performance in NE unit.

Fair in NW, SE and FB units.



With a poor performance in SW unit.



Routine Maintenance of structures was found to be good in all units.

Performance in achieving contractual **Incident Response times** was good in all units.

Except SW unit where it was fair.

Reviews of **Winter Service operations** found performance to be excellent in NW unit.

Good in NE, SE & FB units.

And fair in SW unit.

Contents

Introduction

The Performance Audit Group (PAG) contract undertakes auditing and monitoring of Operating Company (OC) performance to check compliance in delivering the 4th Generation Term Contract for Management and Maintenance of the Scottish Trunk Road Network.

There are five Term Maintenance Contracts operated by three companies:

- **NW unit – Bear Scotland Ltd.**
- **SW unit – Scotland TranServ**
- **NE unit – Bear Scotland Ltd.**
- **SE unit – Amey Plc.**
- **FB unit (Forth Bridge) – Amey Plc.**

PAG utilises a risk-based approach to assessing contract performance. A risk register, populated with the key risks to delivery, is updated quarterly to keep it focussed on current issues. Audit and monitoring programmes are developed from this register, subject to amendment as the year progresses depending on changing circumstances.

From the results of PAG reporting OCs are given ratings from Excellent (Full compliance with contractual requirements), to Good, Fair and Poor. These are colour coded in the tables throughout this report as opposite;

Excellent	
Good	
Fair	
Poor	

There are two key aspects to the areas ratings are applied to;

- Term maintenance contracts contain Performance Indicators (PI). These are generally numerical percentages measured via either data entered into the Integrated Roads Information System (IRIS), or from data held by the OCs. These are generally quantitative in nature based on programme completion with no measure of the quality of operations.

- The audit and monitoring programmes undertaken by PAG focus more on the quality of operations with ratings based on performance observed.

Where appropriate these ratings and PI percentages are also given in the relevant sections of the report, derived by averaging ratings and values reported by PAG across the annual period.

Forth Bridges unit

The Forth Bridges unit (FB) contains the existing Forth Road Bridge along with the new Queensferry Crossing and linking roads to either side. New assets have been created in the Forth Bridges unit as part of the Queensferry Crossing however not all of these assets have been passed over to the FB unit Operating Company with some of these assets still being managed and maintained by the Forth Crossing Bridge Constructors (FCBC), including the Queensferry Crossing itself. Of the assets that have been handed over there are inconsistencies in the information in the asset management database, IRIS, meaning at this stage it is not possible to rate the Performance Indicators relating to inspections and maintenance.

Network Maintenance

Safety Inspections and Category 1 Defects

Operating Companies undertake Safety Inspections principally to identify and make safe Category 1 defects. There is a Performance Indicator (PI) measuring compliance in undertaking Safety Inspections to contractual timescales. PAG also undertakes further monitoring as a check on the quality of inspections with rating based on the percentage of Category 1 defects identified by Operating Companies.

The PI performance of Safety Inspections across all units remained broadly consistent with the previous year. FB and SE units notably managed 100% achievement in undertaking Safety Inspections to contractual timescales.

	NW 2018/19	SW 2018/19	NE 2018/19	SE 2018/19	FB 2018/19
PI 05 Safety Inspections and Patrols	97%	96%	98%	100%	100%
Quality of Safety Inspections					100%

Table 1 - Safety Inspection Ratings

As a measure of the quality of Safety Inspections, PAG undertakes route inspections raising Observations Resulting from Inspection (ORI) where Category 1 defects were noted as missed by the Operating Company. Figure 1 gives the total number of Category 1 defects raised over the course of the annual period by OCs, compared to the number of Category 1 ORIs raised by PAG. This is then expressed as a percentage for comparison purposes. Overall performance Quality ratings are also given in table 1.

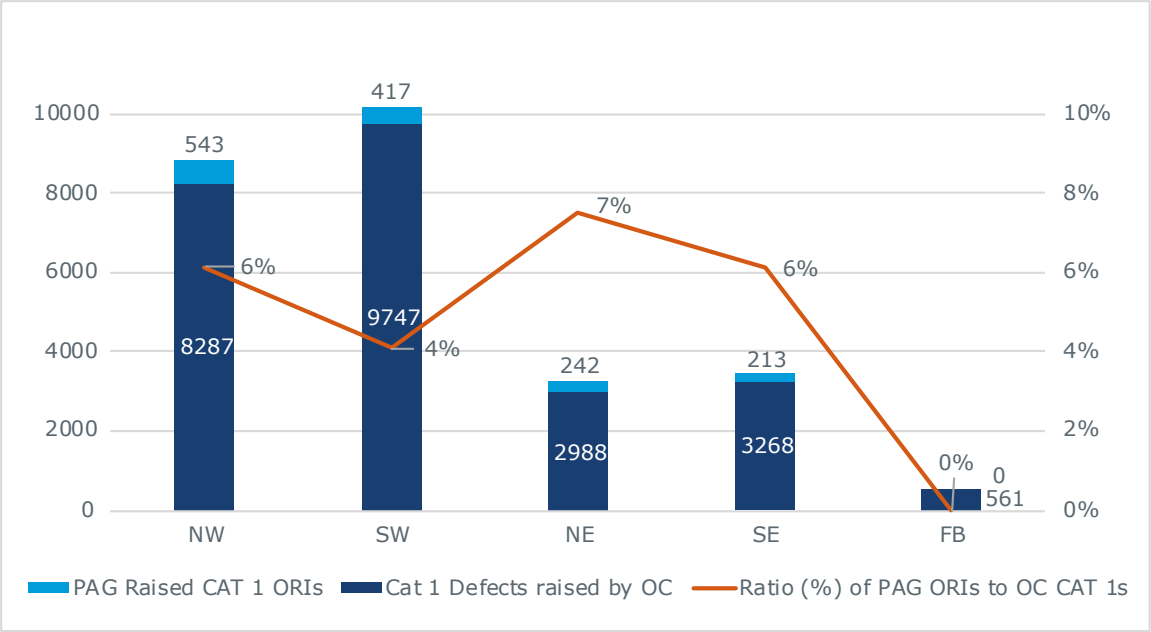


Figure 1 - Category 1 Defects and ORI's raised 2018/19

Network Maintenance

Table 2 gives a split by category of the ORIs raised by PAG.

ORI Category	NW	SW	NE	SE	FB
Bridges and structures	2	2	1	3	0
Cat 1 (Misc)	6	2	5	0	0
Drainage, gullies and ironwork	77	121	75	96	0
Lighting	5	46	8	2	0
Pothole	154	53	15	18	0
Safety fences, barriers and fences	21	22	13	4	0
Signs, signals, road markings and studs	253	121	119	67	0
Soft Landscaping	17	14	2	8	0
Sweeping, cleaning and litter	2	23	4	15	0
Traffic Management	2	0	0	0	0
Weed control	0	2	0	0	0
Winter Service	0	1	0	0	0
Workmanship	4	10	0	0	0
Total	**543**	**417**	**242**	**213**	**0**

Table 2 – Number of Category 1 ORI's raised for each Unit

Repair of Category 1 Defects

Whilst Category 1 defects must be made safe when identified, Operating Companies have 28 days to undertake a permanent repair. Performance is measured via a contractual Performance Indicator for which NW and FB units both achieved a Good performance with SW, NE and SE units all achieving a Fair performance.

As a further check PAG monitors the number of defects which each operating company has in its backlog. This is defects which have gone over the 28 day repair timescale, or 56 day repair timescale for bridge parapets. It was noted that the majority of defects in the backlog were in the Signs, Signals, Road Markings and Studs category.

- NW year started with 222 defects in the backlog which was reduced to 99 by March 2019
- SW saw an increase from 109 to 162
- NE reduced the number of defects backlogged from 101 down to 33 over the course of the year
- SE decreased from 112 to 51
- FB increased in FB from 0 to 1

Network Maintenance

	NW 2018/19	SW 2018/19	NE 2018/19	SE 2018/19	FB 2018/19
PI 03 or 3a(FB) Repair of Category 1 Defects	95%	94%	92%	94%	98%
PI 3b(FB) Repair of Category 1 Defects Forth Road Bridge					100%

Table 3 - Repair of Category 1 Defect Rating

Hazard Notices

PAG has the facility to issue Hazard Notices where it observes a hazardous situation on the network. During the reporting period PAG had issued a total of fifty-five Hazard Notices; twenty-five in NW, thirteen in SW, seven in NE, ten in SE and zero in FB. Typically, the OCs ensured that the Hazard Notices were responded to within the contractual timeframes. The trend shows the most common cause of Hazard Notices were missing/sunken gulley covers, potholes or poor traffic management.

Detailed Inspections

Operating Companies are contractually required to undertake Detailed Inspections, a walked inspection of all assets on the network, generally annually (although certain assets have differing periods). This inspection identifies and records in IRIS defects and inventory condition. Whilst a Performance Indicator in the contract measures this area, PAG also undertakes monitoring exercises and audits to check on the quality of Detailed Inspections. No rating was recorded in FB due to ongoing issues with the inventory database and the partial nature of handover of assets for the FCBC.

Performance Indicator

During the reporting period the average Performance Indicator for carrying out Detailed Inspections in NW, SW, NE & SE units was Poor.

The NW unit increased its PI score from 58% to 76% over the course of the annual period.

In the SW the PI figure remained broadly similar throughout the year averaging at 80%. Dipping in the first half of the reporting period before recovering slightly in the second half.

The SE unit saw a steady improvement throughout the year rising from 74% to 88%.

The NE unit also saw a steady improvement throughout the year rising from 75% to 88%.

Quality of Detailed Inspections

As part of the Detailed Inspection activity OCs are required to record the condition rating of each asset in IRIS. PAG found all Operating Companies to be Poor in this area.

NW and NE units were issued with Remedial Notices relating to performance in recording asset Condition Ratings. NW also had a Remedial Notice for poor performance in undertaking Detailed Inspections.

SW and SE units have had Remedial Notices open since 2015 relating to validation of Inventory in IRIS.

Network Maintenance

In the reporting period SW unit performance was found to have mixed results with some aspects of the asset recorded accurately in IRIS inventory however other areas were found to be inaccurate. In the SE unit PAG monitoring exercises found IRIS to generally correlate with assets on the ground with the OC working towards full compliance.

This aspect of contract delivery remains high in the PAG Risk Register and will subsequently remain in ongoing PAG audit and monitoring programmes.

Road Markings

Monitoring reviews were undertaken in the annual period on the requirements for inspection and defect recording of road markings. Operating Companies are required to undertake this inspection annually, generally via a mechanised automated survey system, with defects noted subsequently entered into IRIS. NW, SW, NE and SE units had a Poor performance noted with defects either not being raised correctly in IRIS or subsequently programmed for repair in line with defect category. Remedial Notices were issued to NW, SW and NE units as a result.

Again this aspect of contract delivery will remain in ongoing PAG audit and monitoring programmes.

Geotechnical Detailed Inspection Audits

PAG undertook audits in the NW, SW, NE and SE to verify that the Operating Companies have a system for identifying, monitoring and maintaining earthworks, embankments, landslips and geotechnical assets in accordance with the Contract.

All Units were found to be generally in compliance with the contract. In particular SE demonstrated a pro-active response having developed their own landslip strategy with a local register of geotechnical assets that include high risk sites and other items considered to be lower risk.

It was noted in all audits that there is a limited functionality in IRIS for recording of differing types of geotechnical asset which prevented OCs from accurately recording different inspection types and requirements. However, this should not stop the OC from undertaking their inspection requirements and noting defects for repair as appropriate.

The Design Manual for Roads and Bridges sets out the requirements undertaking inspections of geotechnical assets. With the exception of SW unit, all other OCs were found to not be compliant in the standard at the time of audit. Non-conformances were raised to ensure this is remediated.

	NW 2018/19	SW 2018/19	NE 2018/19	SE 2018/19	FB 2018/19
PI 06 Detailed Inspections	66%	80%	83%	82%	
Quality of Detailed Inspections					
PI 21 or 23a(FB) Recording Inventory Condition Rating			15%	88%	
PI 23b (FB) Recording Inventory Condition Rating Forth Bridge					

Table 4 - Detailed Inspection and Condition Ratings

Network Maintenance

Cyclic Maintenance

Cyclic Maintenance is undertaken on a range of asset types including, amongst other elements, cleaning of drainage, cleaning of sign faces, cutting grass and weed control. Performance is measured via a contractual Performance Indicator which measures the number of assets which are recorded as having had cyclic maintenance undertaken within contractual timescales. PAG adds to this measure via monitoring activities on the quality of work done against the contract requirements.

For the Performance Indicator averages SW and SE units achieved a Good performance over the annual period, with NW achieving a Fair performance and NE Poor. The FB unit was not scored on this PI due to inconsistencies in the asset database information as not all assets have been handed over to the OC and remain maintained by the Forth Crossing Bridge Constructors (FCBC).

PAG undertook reviews of a range of cyclic maintenance operations including drainage, weed control and litter. Overall the quality of the operations reviewed found a Good performance in NE and SE units, with a Fair performance in the NW and SW units.

Of particular note was performance in relation to various drainage assets. PAG monitoring found a majority of gullies were being cleaned annually, however issues were found in all units relating to a number of blocked gullies not being cleared. NW and NE had filter drains out with maintenance specification timescales for raking and cleaning the filter drain material. In the SE unit manholes were reviewed which were found to be generally clear and flowing freely, however there were issues noted with the inventory being incorrect, and evidence that some manholes had not been lifted for maintenance.

Maintenance of drainage remains high in the PAG Risk Register and will subsequently remain in ongoing PAG audit and monitoring programmes.

	NW 2018/19	SW 2018/19	NE 2018/19	SE 2018/19	FB 2018/19
PI 07 Maintenance	82%	92%	75%	91%	
Quality of Cyclic Maintenance					

Table 5 - Cyclic Maintenance Ratings

Network Maintenance

Routine Maintenance

In the reporting period PAG completed one hundred forty-five site visits across all units. PAG visited a variety of different works sites including but not limited to; carriageway resurfacing, drainage improvement, ditch cleaning, VRS replacement schemes, lighting column replacement, gully repairs, pathway resurfacing and landscaping works.

PAG found all units to have a Good standard for workmanship, supervision and records. Health & Safety on site was found to be good with any minor issues identified being addressed timeously by the OCs. FB was not included in these Routine Maintenance visits due to the relatively small number of operations on the unit.

	NW 2018/19	SW 2018/19	NE 2018/19	SE 2018/19	FB 2018/19
Quality of Routine Maintenance					

Table 6 - Routine Maintenance Ratings

BEAR Scotland NW – Case Study

A85 Dunbeg to Connel VRS Scheme

The A85 between Connel and Oban was identified as a site for further investigation due to frequent accidents involving vehicles leaving the road (10 in 3-years).

An accident investigation was undertaken and identified the need to install lengths of Vehicle Restraint System (VRS) to protect errant road users from roadside hazards.

A85 Dunbeg to Connel VRS Scheme

Key design challenges included restricted verge width to accommodate the VRS and the discovery of isolated rock which required some foundation details to be altered. Works were programmed outside peak tourist season to minimise delays. Unexpected complaints were received from cyclists who believed the VRS restricted the opportunity for them to use the verges in an emergency. BEAR Scotland are now engaging with this user group to evaluate if walking and cycling facilities can be introduced between Dunbeg and Connel.

Electrical and Lighting Management

PAG undertook various reviews to ensure that the electrical assets were being maintained with the IRIS inventory records updated in IRIS to accurately account for the electrical assets on site.

Network Maintenance

Electrical Inventory

SW and SE units were both noted as not updating the electrical inventory records within the contractual timescale to show new assets and associated data following the completion of a scheme. It was also noted that the original inventory records had not been populated with the full extent of required information.

PAG found that NW and NE units, following completion of new lighting schemes, had amended and updated most inventory items in IRIS with only a few exceptions. Issues were noted on testing records not being complete and stored in the correct location.

PAG found that FB unit was undertaking condition inspections and electrical inventory management as required.

Day Burning

PAG carried out a review in the NW to check for day burning on roadside lighting across the A83 trunk road network. The review identified a number of assets which were lit during daylight hours. It was noted that some of the assets were fitted with control nodes to enable remote monitoring and management, however these were not functioning resulting in the day burning not being recorded in IRIS.

Festive Lighting

PAG conducted a review in the NW, SW, NE and SE units to ensure that the Operating Companies in conjunction with local authorities were managing, inspecting and maintaining festive lighting connection points that had been installed on Trunk Road lighting assets over the festive period.

NE unit produced a Good performance following all relevant application processes. In the SE unit performance was found to be Fair as it cited that festive lighting was inspected during their electrical inspection process. However, as inspections are carried out every 2 years SE unit could not guarantee that festive lighting was being installed as per specification. In NW and SW units, PAG found performance to be Poor. Four sites were reviewed in NW who were unaware of festive lighting connections points installed onto network assets in three locations. It was unclear if the lighting was installed to specification. As the road lighting in the unit has a 24-hour supply installed festive lighting was also burning during the day time. SW unit didn't appear to have any knowledge of festive lighting installed on the network.

PAG will undertake further monitoring performance in this aspect of network management in the next festive period.

Electrical Audits

PAG undertook audits on two aspects of electrical asset inspection and maintenance; inspection and maintenance of traffic signal installations and detailed inspection requirements of all electrical apparatus.

Network Maintenance

NE unit's operational strategy and annual report documents for traffic signals were found to be in place, however there were several non-conformances noted ranging from document submission to inspection and testing requirements. A follow up audit later in the year found most of these issues had been addressed by the OC. For electrical detailed inspections PAG found that aspects of inspection were being undertaken but not the full requirements. Defects were also not being entered into IRIS.

In NW unit operational strategy and annual report documents for traffic signals were found to be in place and inspection reports were being uploaded to IRIS. Issues were noted however with defects not raised for repair in IRIS and documentation not being present in control cabinets which could result in safety issues on site. A follow up audit found all issues had been satisfactorily addressed by the OC. For the electrical detailed inspection, it was noted the programme was not up to date, however the OC was taking steps to ensure the programme was delivered.

In SE unit it was noted that traffic signals did not have an operational strategy, issues were also noted regarding inspections and testing certification and defect identification, recording and repair. A follow up audit found significant improvement with all issues satisfactorily addressed. For the electrical detailed inspections issues were noted with paperwork on site which could result in safety issues on site, inspections were also not being undertaken in accordance with the contract. A follow up audit did find significant improvement however inspection and testing frequency remain out with contractual timescales.

In SW unit traffic signals had incomplete documentation in roadside cabinets, inspections were being undertaken but defects were not being recorded in IRIS for repair. Strategy documents were not in place and annual reports had not been submitted. For electrical detailed inspections several issues were noted on inspection records and asset inventory information not being complete. Defects were also not being raised in IRIS for repair.

In FB unit for electrical detailed inspections the OC was fulfilling its requirements in a well-managed fashion with inspections undertaken and records in place. Site information was found to be in place. For traffic signals issues were noted in testing and certification for traffic signals, including no schematics on site.

PAG has worked in collaboration with all Operating Companies throughout the year to improve performance in all electrical areas and on the whole this has been well received. Electrical management and maintenance aspects of contract delivery remains high in the PAG Risk Register and will subsequently remain in ongoing PAG audit and monitoring programmes.

	NW 2018/19	SW 2018/19	NE 2018/19	SE 2018/19	FB 2018/19
Quality of Electrical Management and Maintenance					

Table 7 – Electrical and Lighting Ratings

Network Maintenance

Well Lit Network

Performance in relation to lighting on the network is measured via MI 01 which gives the percentage of lighting units which were operating each month. An annual average is given in the table below.

	NW 2018/19	SW 2018/19	NE 2018/19	SE 2018/19	FB 2018/19
MI 01 Well Lit Network Average	**98%**	**92%**	**97%**	**97%**	**95%**

Table 8 - Well Lit Network

Structures Maintenance

Principal and General Inspections

Operating Companies are required to undertake inspection of all bridges and other structures on the trunk road network at regular intervals. There are several structures out with the trunk road boundary which are also inspected. General Inspections (GI) are to be undertaken every 2 years with a Principal inspection (PI) undertaken every 6 years. The contractual Performance Indicator for Principal and General Inspections is a measure of achievement of inspections against programme.

All units achieved Excellent to Good performance in undertaking the inspections against programme.

PAG undertook a review of the quality of General Inspection reporting with a Fair performance rating found across all units except for Forth Bridge which received a Good performance rating. Issues were noted in all units with not all defects being fully identified and logged in GI reports.

A review of Principal Inspections was undertaken on the FB unit in which the inspection of a pipeline protection structure was considered to be Poor.

The quality of structures inspections reports remains high in the PAG Risk Register and will subsequently remain in ongoing PAG audit and monitoring programmes.

A new national standard was issued in June 2016 implementing a Bridge Inspector Certification Scheme (BICS). In the annual period none of the Operating Companies were found to have taken adequate steps to ensure training and certification to this scheme was in place by the required deadline for full implementation of June 2018. Despite Transport Scotland working with the Operating Companies to achieve compliance, Remedial Notices were issued in February 2019 to all Operating Companies. PAG will continue to monitor the steps taken by Operating Companies to achieve BICS certification for all staff undertaking structures inspections.

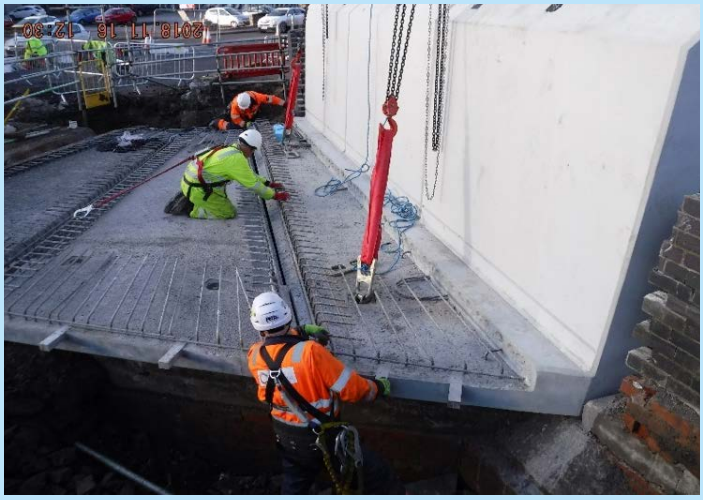
	NW 2018/19	SW 2018/19	NE 2018/19	SE 2018/19	FB 2018/19
PI 08 Structures Principal Inspections	100%	100%	100%	100%	98%
PI 09 Structures General Inspections	99%	100%	99%	99%	100%
Quality of Principal and General Inspections Reporting					
PI 10(FB) Forth Road Bridge Inspections					100%

Table 9 - Structures Inspections Ratings

Structures Maintenance

BEAR Scotland NE – Case Study

A96 Keith Dufftown Rail Bridge Refurbishment



This scheme involved the refurbishment and structural upgrade of the substandard bridge parapets on the bridge carrying the A96 over the local heritage railway in the town centre of Keith, Moray. The works utilised reinforced concrete precast units and replacement of the corroded steel beams supporting the bridge with precast RC deck slabs.

The scheme refurbished the bridge to improve its the long-term durability. The new reinforced concrete parapets provide high containment protection, preventing an errant vehicle entering the heritage railway line. The overall aesthetics in the area were improved with the construction of new approach walls using Fyfestone masonry blocks to tie in with existing materials in the vicinity and provide a consistent precast cope stone profile throughout.

The works were planned in two phases to avoid impacting the train timetable of the Keith Dufftown Railway Association.

Structures Cyclic Maintenance

Cyclic maintenance is undertaken on all structures bi-annually to keep structural elements clean and in good working order. A Performance Indicator measures performance against programme for undertaking cyclic maintenance, PAG also undertakes reviews of the quality of operations.

The Performance Indicator values averaged over the annual period found an Excellent performance for FB unit with a Fair performance in SW, NE and SE units and a Poor performance in NW. It was noted however that the PI 10 value for NW unit is low due to late entry in contractual timescales of record data into IRIS for the work done in November 2018, making the PI 10 score 25% for that month with the value at 100% by end of the same month. This had the effect of reducing the average percentage over the annual period.

In the quality reviews undertaken by PAG, performance in undertaking cyclic maintenance activities ranged from Fair to Good. There was evidence of elements; such as cleaning of expansion joints, vegetation clearance, clearing of bearing shelves and checking and tightening of parapet bolts and fixings, not being fully completed as per contractual requirements.

Structures Maintenance

SW unit was issued with a Remedial Notice due to noncompliance in undertaking cyclic maintenance on structures with access difficulties. The Operating Companies are required to ensure maintenance is undertaken and to devise access methodologies where this presents difficulties. This Remedial Notice remains open.

All units were found to have incorrectly recorded dates for each area of cyclic maintenance. Measures have been put in place by OCs to rectify this. Transport Scotland has assisted this process by making amendments to the IRIS system to allow dates to be more clearly recorded. PAG will also continue to monitor performance in this area as it remains high in the PAG Risk Register.

	NW 2018/19	SW 2018/19	NE 2018/19	SE 2018/19	FB 2018/19
PI 10 or 12a(FB) Structures Maintenance	88%	91%	93%	94%	100%
Quality of Structures Cyclic Maintenance					
PI 12b(FB) Structures Maintenance Forth Bridge					100%
PI 27a (FB) Access Systems Inspection - Forth Bridge					99%
PI 27b (FB) Access Systems Maintenance and Testing - Forth Bridge					91%
PI 29 (FB) Programmed Special Inspections - Forth Bridge					100%

Table 10 - Structures Maintenance Ratings

Routine Maintenance

PAG undertook a number of visits to structures site operations. In general, workmanship, records and supervision were found to be of a Good standard for the works being undertaken.

	NW 2018/19	SW 2018/19	NE 2018/19	SE 2018/19	FB 2018/19
Quality of Structures Routine Maintenance					

Table 11 - Structures Routine Maintenance

Structures Maintenance

Structures Risk Programme – Half Joints

Transport Scotland issued an Interim Advice Note in March 2018 that implemented an interim management strategy for structures containing a type of joint known as a half-joint. The advice note contained a list of known structures of this type. To ensure that all structures with half-joints were identified, Operating Companies were requested to supplement this list by reviewing all bridges on their networks to determine if any other structures contained half-joints. Once identified these joints can be inspected, as they can be vulnerable to deterioration, with any remedial works and future maintenance requirements planned.

In NW unit the Interim Advice Note did not initially identify any half joint structures. PAG notes that NW unit had identified a structure containing half joints in 2014 as part of a hidden defects review, however this had not been properly recorded in SMS which was the original source data for the list of half joint structures in the Interim Advice Note. BEAR subsequently re-identified this half joint structure as part of a routine site visit in January 2019. It is noted that this structure was identified 9 months after publication of the Interim Advice Note suggesting NW unit had not been compliant in the requirement to undertake a separate check of all structures for the presence of half joints.

In SW unit the Interim Advice Note identified 42 structures with half joints. PAG reviewed eleven randomly selected structures raising concerns that although Principal Inspections had been undertaken which had examined half joints, they had not, in PAG's view, examined the internal surfaces of the half joints closely. In addition, it was not clear how the OC had validated the list of structures. The OC failed to meet the due date of October 2018 for inspections and a Remedial Notice was later issued to Scotland TranServ for failure to meet the obligations of the Interim Advice Note. SW unit has now developed a risk-based programme and has agreed delivery dates with Transport Scotland. All inspections are programmed for completion by December 2019.

In NE unit the Interim Advice Note identified four half joint structures, however two of these were removed following further investigation by the OC. Special inspections on the two remaining structures, completed within appropriate timescales.

The Interim Advice Note identified 16 structures in the SE unit. The OC identified that three of these were duplicates and programmed further inspections of the remaining 13 structures. All inspections were completed by the due date of October 2018 except one which was delayed as a result of environmental matters (bats), subsequently completed in February 2019.

There was only one half joint structure identified in the Interim Advice Note in FB unit although the OC advised that there were actually two in the Unit. Both inspections were completed by the due date of October 2018.

PAG will continue to monitor performance in undertaking these inspections and any subsequent reporting requirements.

Structures Maintenance

Amey FB – Case Study

Forth Road Bridge Main Cable Investigation

The main suspension cables on the Forth Road Bridge comprise 11,618 individual high tensile steel wires, compacted to approximately 600mm diameter.

To determine the condition of the internal steel wires Amey progressed cable investigation site works between April 2018 and October 2018. These works involved exposing, inspecting, sampling and testing a series of the internal high tensile steel wires at pre-determined locations. To expose the internal steel wires the external protective membrane and wrapping wire were removed and the internal high tensile wires prised apart using wedges. This allowed both visual inspection and material sampling activities to be completed for further laboratory analysis. Following this activity, the main cables were re-wrapped using a specialist bespoke wrapping machine. The preliminary visual results indicated the dehumidification system to have been effective, with further detailed analytical works and reporting being completed in 2019/20.

Network Operations

Winter Service

Operating Companies provide winter services to ensure the trunk road is kept free of snow and ice throughout the winter period. Performance in providing winter service is measured via a Performance Indicator which measures the planned winter salt treatment operations being carried out in the timescales planned, unplanned treatment call out response times and data logger download achievement. Performance was found to be Excellent to Good across all units.

Winter Preparedness

PAG undertook audits at the start of the winter period to assess preparedness for the winter season. Overall all units were found to have all contractual requirements in place and, except for a few minor aspects, were fully prepared to undertake the Winter Service.

Winter Services

Ongoing monitoring activities were undertaken by PAG over the course of the winter period of the planned winter treatments by operating companies. All OCs were all found to be generally satisfactory and in line with the contractual requirements. PAG also undertook depot visits throughout the winter period which found winter plant and stocks to be in good condition with accurate records on salt stocks and storage conditions compliant with the contract. Issues were noted however in the level of winter records being populated in the electronic access portals in the SW, SE and FB units.

In the SW unit issues were noted with its brine saturators which were in a poor condition and not operating to automatically adjust the level of salt saturation in the brine. Following issue of a Remedial Notice this was addressed and the saturators replaced to fully working order. Reviews of SW operations did also find operational failings which PAG has highlighted to the Operating Company for review and appropriate action. A Remedial Notice was issued for operating a gritter vehicle without a plough attached.

Following a request from Transport Scotland an in-depth review was undertaken on an isolated incident in the NE unit after operational failings were noted during a specific period of poor winter weather. Although there were a few failings the OC was found to be generally undertaking its winter treatment responsibilities appropriately, however there were issues identified in communications to both the public and the media on ongoing conditions and situational awareness.

	NW 2018/19	SW 2018/19	NE 2018/19	SE 2018/19	FB 2018/19
PI 11 or 13(FB) Winter Service Treatments	100%	98%	99%	100%	100%
Quality of Winter Service					

Table 12 - Winter Service Ratings

Network Operations

Disruption Risk Management and Incident Response

The Contract measures Operating Company performance in relation to Incident Response via achievement of required response times for initial, secondary and contingency responses to incidents. Averages of this Performance Indicator over the annual period gives a Good performance for all units except SW who had a Fair performance.

	NW 2018/19	SW 2018/19	NE 2018/19	SE 2018/19	FB 2018/19
PI 04 Incident Response	98%	92%	95%	98%	97%

Table 13 - Incident Response Ratings

Disruption Risk Management Audits

PAG undertook audits in all units to verify that the Operating Company's Disruption Risk Management Plans (DRMP) and procedures met contractual requirements and in accordance with Transport Scotland's Manual for the Management of the Risk of Unplanned Network Disruption.

PAG observed that NW unit had developed procedures and has established Risk Site registers and Risk Action Management registers, however these were not being updated in line with the contractual requirements.

Both these registers contained several potential risk sites, the way these are recorded and actioned through the process requires further discussion with Transport Scotland.

SW unit was found to be meeting contractual requirements and working mostly in accordance with the disruption manual. It was noted that where operations did not match its exact guidelines similar results and conclusions were being raised by different means. Observations were also noted around the process to bid for schemes designed to mitigate disruption risk sites with clarity required from Transport Scotland on the process.

There was evidence that the NE unit had processes in place to deal with disruption risk management, however some of the core tools such as Risk Site register were not being fully utilised and populated. It was also observed that the OC could not demonstrate utilising the Disruption Risk Assessment Tool correctly to produce the Risk Management Action. This could affect the Disruption Risk Management process resulting in actual and potential risk sites not being correctly identified.

Both SE and FB units were found to be managing their disruption risks on the network in accordance with contractual requirements with further risks being added to the Disruption Risk Site register as they become evident.

This aspect of contract delivery remains on the PAG Risk Register and will subsequently remain in ongoing PAG audit and monitoring programmes.

Network Operations

Flood Reports

Operating Companies are required to upload flooding reports to IRIS for each instance of flooding on the network. PAG carried out monitoring activities in the NW, SW, NE and SE units to determine if Operating Companies were compliant.

PAG noted that NW unit was not raising defects and uploading flooding reports and photographs into IRIS for all flooding incidents that occurred on the trunk road network.

SW unit was found to not be producing flooding reports and uploading to IRIS as required for which a Remedial Notice was issued. A follow up review four months later found the issues had not been fully addressed.

PAG found that NE unit had uploaded a flood report for nearly all incidents reviewed, however most defects raised were noted to have no photographs attached. PAG also identified there were failings in ensuring flooding reports were uploaded to IRIS within contractual timescale. Most of defects raised were also noted as remaining open in IRIS at the time of the review.

The SE unit was noted as not producing flooding reports or raising defects of the sample reviewed. A small number had photographs uploaded against incidents.

This aspect of contract delivery remains in the PAG Risk Register and will subsequently remain in ongoing PAG audit and monitoring programmes.

Journey Time Reliability

Operating Companies have requirements to ensure roadworks do not cause undue disruption on the network. There is a dedicated position, the Journey Time Reliability Coordinator (JTRC), who's role it is to liaise with Local Authorities, Police Scotland and other Operational Partners and to coordinate roadworks for minimal disruption.

Reviews of roadworks incidents

At the request of Transport Scotland PAG carried out investigations into traffic disruption at two sites which experienced disruption due to traffic management.

Traffic Management on a project on the A9 Cromarty Bridge in the NW unit involved a partial closure of the road and adoption of convoy traffic management system to avoid the need for diversion routes and the subsequent disruption for road users. However, the combination of Friday afternoon traffic and convoy working exacerbated delays. The investigation indicated failings by NW unit with regards liaison with Transport Scotland and notification to Traffic Scotland.

The OC raised an internal non-conformance and implemented appropriate remedial measures to prevent recurrence. To assist in this aspect going forward the OC undertook a positive action to review and update the requirements in regard to restrictions on the network.

Network Operations

The PAG review also noted that Journey Time Reliability Coordinator did not become involved when the incident occurred, as contractually required when there are delay's or incidents caused by traffic management.

PAG recommended that NW unit should undertake all future proposed works with proper planning, notification and liaison by the JTRC with Transport Scotland and Traffic Scotland to avoid any similar recurrence.

PAG also carried out an investigation on planned works on the A1 at Granthouse in the SE unit. The investigation followed significant unexpected traffic disruption and delay associated with a planned road resurfacing scheme the traffic management for which involved a road closure and diversion routes. PAG review found failings by SE unit regards the Journey Time Reliability Coordinator not undertaking appropriate reviews of traffic management in advance, not utilising delay modelling tools, not liaising with local authorities and Police Scotland over suitability of planned diversions routes and not being available to assist to manage incidents once they arise. SE unit was issued with a Remedial Notice as a result of the failings of the JTRC.

Journey Time Reliability Co-ordinator Audits

PAG undertook audits in all units to verify that the Operating Companies arrangements for the Journey Time Reliability Co-ordinator role meets the 4G contractual requirements.

The audit of NW unit identified it had insufficient resources to cover the contractual requirements for the JTRC role, although in general the JTRC is carrying out duties regarding network access and roadworks planning. A risk was identified in forecasting delays as it was felt by the OC that the Traffic Scotland delay modelling tool does not give accurate results, particularly when convoy working was being utilised. The OC tends to use its own experience when forecasting delays to ensure a level of accuracy.

It was recognised that the introduction of INRIX traffic software may resolve some of the issues relating to measurement of inaccurate delay information.

The SE unit audit was undertaken approximately six months after the disruption event on the A1 at Granthouse referred to above. The audit found that the OC had amended its procedures since that incident and were now undertaking the role of the JTRC satisfactorily including attendance at appropriate liaison meetings and use of the Delay Modelling Tool.

PAG Observed that SW, NE and FB units were all fulfilling the role of the JTRC role. In SW, although some duties were delegated out to different members of staff, the methods for JTRC delivery were effective and generally compliant to the Contract.

Traffic Management

For the most part Traffic Management was observed by PAG to be satisfactory during route tours and site visits. Set up was generally compliant and areas were well maintained.

Health & Safety

Health & Safety and CDM Monitoring

PAG complete 141 site visits during the annual period in which H&S and CDM monitoring checklists were completed. PAG found sites were generally kept to very good standard with regards to Health and Safety of site operatives and the passing general public. On-site files were present and well maintained with method statements and risk assessments.

Of the few issues that were noted there was a lack of welfare facility provision on multiple sites across all units, occasional sites had a lack of fire extinguishers in the SW, NE and SE units. In SW unit a few sites had no first aider appointed.

Health & Safety Management System Audits

PAG undertook audits in all units to verify that the requirements of the CDM Regulations 2015 were being fulfilled. All audits found the Operating Companies to be fully understanding of their obligations as duty holders and the requirements of the CDM Regulations. Assessment of various aspects of training and procedure demonstrated good practice throughout.

A site visit to A85 East of St Fillans resurfacing scheme confirmed that NW unit were undertaking their duties on site in accordance with the CDM Regulations. However, the OC was non-compliant with its contractual procedure in uploading completed Health and Safety files to IRIS within the stated timeframe. NW unit took appropriate action following the audit to rectify this non-conformance.

In the SW unit PAG visited the M8 Jct 25 Barrier scheme and found the OC to be fully aware and compliant to its obligations and responsibilities under the current legislation.

NE unit demonstrated a clear understanding and was acting in accordance with the CDM Regulations and the Contract. They evidenced good practice regarding their staff needs and training requirements ensuring all staff and roles are identified with staff having the training support required to fulfil their role.

A site visit to Galafoot Bridge waterproofing scheme confirmed SE unit were undertaking its duties in accordance to the CDM Regulations. One risk and one opportunity were raised during the audit which the OC took immediate action to address.

In FB unit a site visit to the Forth Road Bridge truss end link replacement works contract confirmed it was compliant with its duties regarding the CDM 2015 Regulations, although a few Health and Safety observations were raised during the visit for the OC to resolve.

Health and Safety Forum

PAG was invited in December 2018 to join a collaborative Health and Safety forum chaired by Amey with all Operating Companies participating to discuss their combined strategies for the Road Worker Safety Awareness campaign. A follow up session was held in January 2019 chaired by BEAR. The successes and lessons learned were discussed and it was identified that releasing information via social media was the best received method, with Amey's video demonstrating the dangers to road workers as the most visually impacting release of the campaign.

Health & Safety

Scotland TranServ SW – Case Study

M8 Gantry Refurbishment

Following an initial review Scotland TranServ identified the need to refurbish, reducing wastage and lowering replacement costs, a total of 25 gantries along the M8 through Glasgow.

The latest LED technology was implemented providing benefits in reduced operating and maintenance costs (70% energy saving over their predecessors), also resulting in reduced disruption to drivers with fewer trunk road closures required.

The steelwork was stripped back through shotblasting, new steel welded to replace corroded areas and the existing structure repainted.

Refurbishing these structures, while maintaining traffic flow and reducing the impact on the tourism and retail economies was Scotland TranServ's ultimate consideration. Each structure was removed and replaced during weekend overnight closures, with maximum efficiency and minimal disruption to commuters and businesses.

Quality Management System

All Operating Companies have a Quality Management System (QMS) which must be certified externally to ISO 9001. This provides the processes and procedures to be followed in undertaking all operations in delivering the contract to ensure an acceptable standard of consistency and quality is met.

OC Quality Management System – Non-Conformance Register

A central part of the QMS is the non-conformance register. This process logs any aspect of delivery that is not compliant to contractual requirements and sets out the steps to be taken to resolve the issue.

Both SW and NE units achieved Excellent performance of closing non-conformances within the contractual timeframes. NW unit achieved a Good performance, however in SE and FB units performance was Poor.

PAG will continue to monitor performance in Operating Companies usage of its non-conformance register and its effectiveness.

	NW 2018/19	SW 2018/19	NE 2018/19	SE 2018/19	FB 2018/19
PI 15 or 17(FB) Closure of Non-Conformances	97%	100%	100%	86%	84%

Table 14 - QMS Ratings

Quality and Information Management System Audits

PAG undertook audits in all units to verify that the Operating Companies had a Quality Management System that was compliant with the new ISO 9001:2015 standard and with contractual requirements. The audits determined that all units had QMS systems which were compliant, demonstrating a clear understanding of the new standard, a proactive work ethic towards Quality Management Systems and continued dedication to good practice.

Barriers to accessibility

PAG undertook audits in all units to verify that Operating Companies have been identifying, considering and where practicable removing, barriers to accessibility as required by the Contract and in compliance with the Equalities Act (2010).

In the audits all Operating Companies clearly demonstrated their experience, technical ability and knowledge in this area, however failings were identified in delivery in three key areas of this process. Three of the units did not have an accessibility champion appointed to provide guidance on the process with only SW and NE units complying with this requirement. None of the units were undertaking accessibility audits on schemes where barriers to accessibility had been identified for removal. There was also confusion around the formal contractual mechanisms, via forms DDA1 and DDA2, for promoting schemes involving removing barriers which it is felt were not being effectively managed by the operating companies and could have been more proactively clarified in consultation with their client.

PAG will undertake follow up audits in the next annual period to check progress.

Quality Management System

Sub-Contractors

PAG undertook audits in the NW, SW, and NE to verify that OC's arrangements for the selection, assessment and management of sub-contractors meets contractual requirements. Note SE and FB units had this audit undertaken in the previous annual period so were not repeated in this period.

All units audited were found to have robust mechanisms in place to ensure contractual compliance. A minor issuewas raised in the NE & NW units in that smaller subcontractors may not have industry standard CSCS cards limiting the demonstration of basic H&S competence. Following the audit these units elected to update its subcontractor assessment form to include this check.

Annual Landscape Management Plans

PAG undertook reviews of the Annual Landscape Management Plans produced by the Operating Companies. In all units the Plans were found to be lacking in providing an overall landscaping strategy, clear understanding on the condition of landscape areas, adequate commentary on the effectiveness of operations or any outline of good practice or lessons learned. PAG provided recommendations where improvement could be made through further development.

Sustainability and Environment

Sustainability Monitoring

Over the course of the year PAG completed 135 site visits in which sustainability monitoring checklists were completed. In general, all sites were kept in a clean and tidy condition and no major environmental and sustainability issues were identified. A lack of spill kits or secondary containment was occasionally noted in NW, NE and SE units.

Environmental Management System Audits

PAG undertook audits in all units to verify the effectiveness of the OC's Environmental Management System in accordance with the requirements of ISO 14001:2015, the 4G Term Contract and other relevant legal obligations.

All units demonstrated a clear understanding of the ISO 14001:2015 standard and continued dedication to good practice. Compliance was noted in all areas relating to the environmental and sustainability aspects of the contract as well as all relevant legislation. The sites visited as part of the audits clearly demonstrated the OCs had a detailed knowledge of environmental implications relating to schemes and applied that expertise from the design phase forward, managing resources as well as risk and mitigation processes. Minor issues were occasionally noted relating to spillage and storage of materials.

Sustainability and Environment Monitoring Indicators

Contractual Monitoring Indicators are in place to record the levels of reused, recycled and renewable materials utilised by Operating Companies. The figures below are averages over the annual period. MI 17 measures the percentage of raw materials sources from reused, recycled or renewable sources, whilst MI 18 measures the percentage of waste materials produced in site operations which are either reused or recycled, on or off site.

	NW 2018/19	SW 2018/19	NE 2018/19	SE 2018/19	FB 2018/19
MI 17 Use of Reused, Recycled and Renewable Materials Annual Average	0%	7%	0%	9%	14%
MI 18 Waste Generation and Management Annual Average	100%	98%	100%	100%	91%

Table 15 - Sustainable Material Use Percentages

Sustainability and Environment

Amey SE – Case Study

A68 Galadean Bridge – Scour protection works

Sediment formed an island in the Leader Water upstream of the A68 Galadean Bridge, resulting in erosion of the embankment adjacent to the trunk road structure.

Flow at the outer bend was non-uniform, creating an additional current in the form of a spiral flow and increased flow velocities. To remediate, rock rolls were chosen for their ability to withstand higher water velocities as well as forming a flexible scour protection. The existing material from the island was used to fill the rock rolls, ensuring new sediment was not introduced into the river environment.

Inclement weather conditions during construction works led to a significant land slip requiring a revised two-phase approach. The first included forming a platform and provision of rock rolls for scour protection and Phase 2 the reconstruction of the upper embankment and implementation of Geoweb reinforcing materials.

Financial Management of Programmes

Financial Overview

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

A comparison of spend figures for 2018/19 and 2017/18 is shown in Figure 2. Total spend for 2018/19 is £227.1m (2017/18: £203.1m).

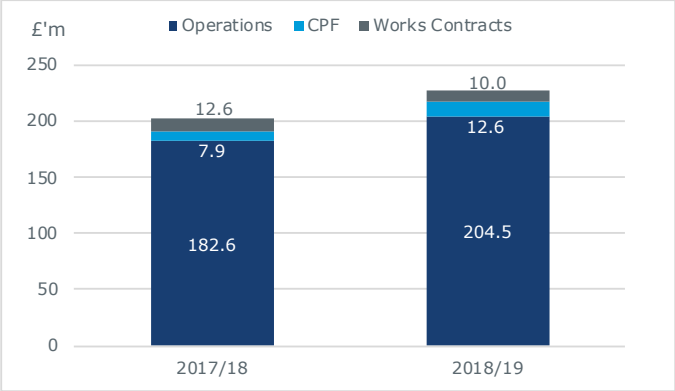


Figure 2 - Spend v Budget (excluding CPF) all Units

A profile of spend by Unit split between OC operations and works contracts is given in Figure 3.

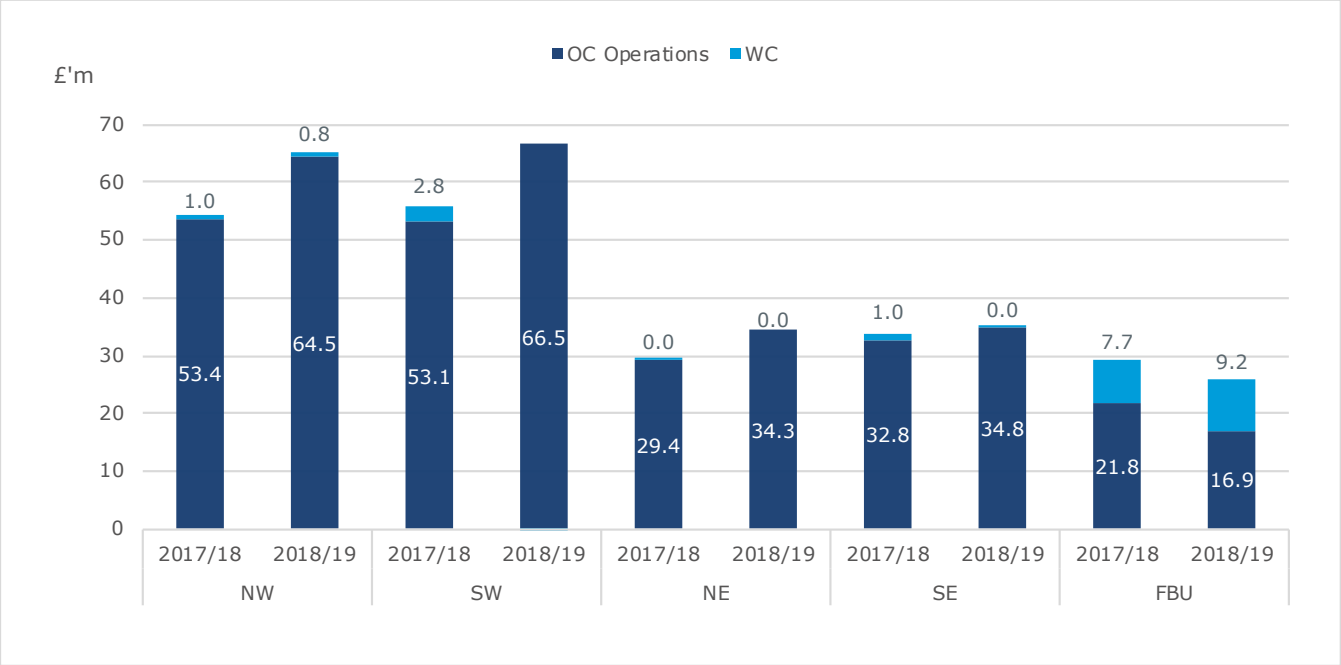


Figure 3 - Spend split by works and operations by unit

Financial Management of Programmes

The budget for 2018/19 of £216.3m (net of CPF) was up £19.8m (10.1 %) from the previous year (see Figure 4).

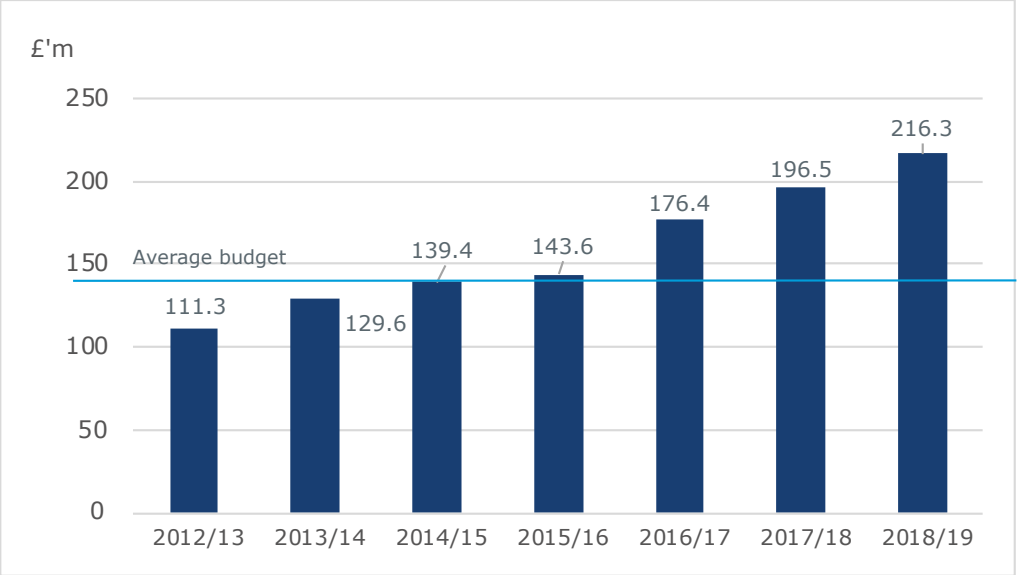


Figure 4 - Comparison of budgets (net of CPF) for maintenance and improvements

Spend net of CPF for 2018/19 is £214.5m (2017/18: £195.2m), which is £1.8m less than budget.

For 2018/19, CPF payments totalled £12.6m on operations priced at base rates totalling £204.5m, see Figure 5. The CPF figure for 2017/18 was £7.9m on operations priced at base rates totalling £182.3m.

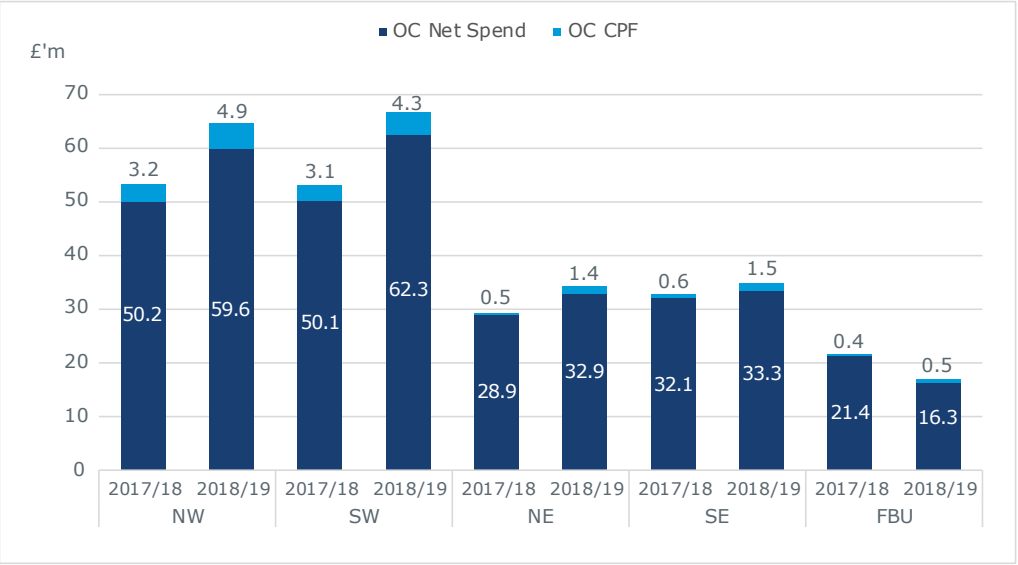


Figure 5 - OC spend by base rates and CPF all Units

Financial Management of Programmes

Transport Scotland's 4G contracts have generated savings through competitive procurement process when compared to prices under its previous contracts for like operations. Savings of £4.2m have been delivered during 2018/19, with cumulative savings of £32.1m delivered to date over the life of the 4G contracts.

Spend Analysis

Transport Scotland reports a network asset valued at a net £14.1bn for roads and £6.44bn for structures. In maintaining its asset, Transport Scotland spent £227.1m during 2018/19 (2017/18: £203.1m). Figure 6 shows how this spend was allocated by asset type and operational activity during the year, Figure 7 giving a breakdown by maintenance activity.

The asset types and operational activities included in the headings in Figure 6 are as 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.

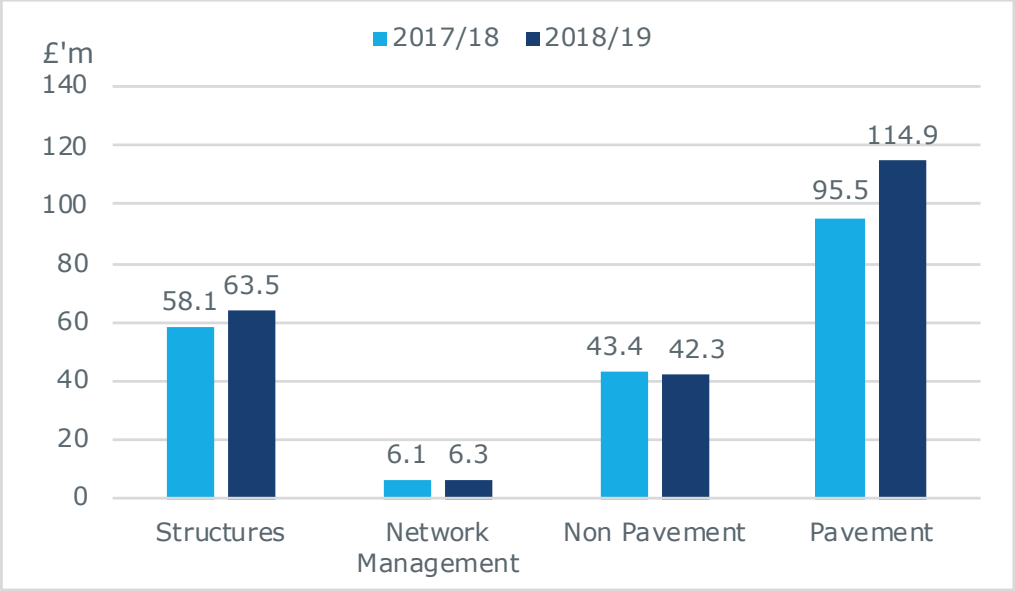


Figure 6 - Spend by asset type and operational activity all Units

Financial Management of Programmes

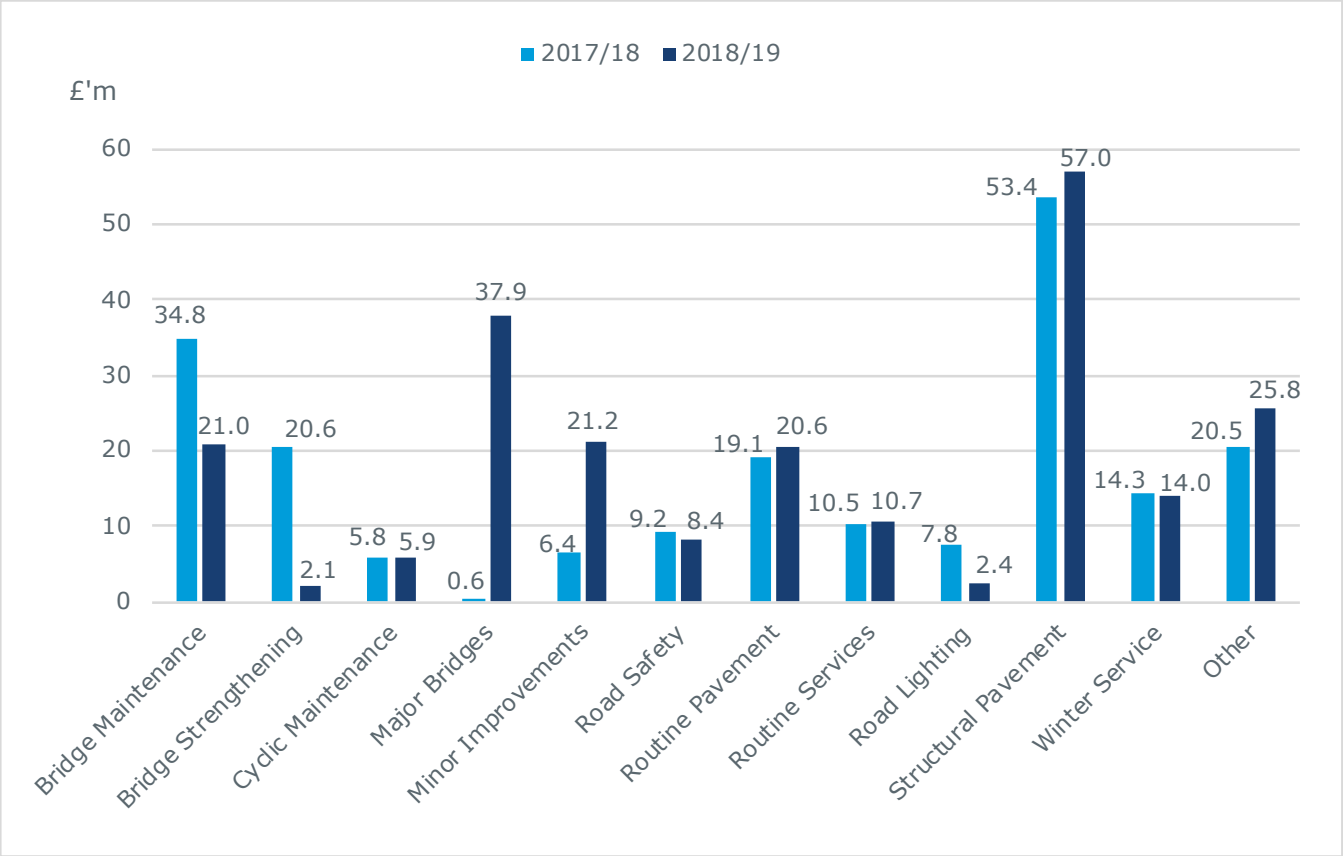


Figure 7 - Shows spend by maintenance activity

Budget, Spend and Programmes

PAG monitors and reports on the inter-relationship of budget, orders and spend to assist Transport Scotland in its financial management. How this fit into the overall process is shown in Figure 8.

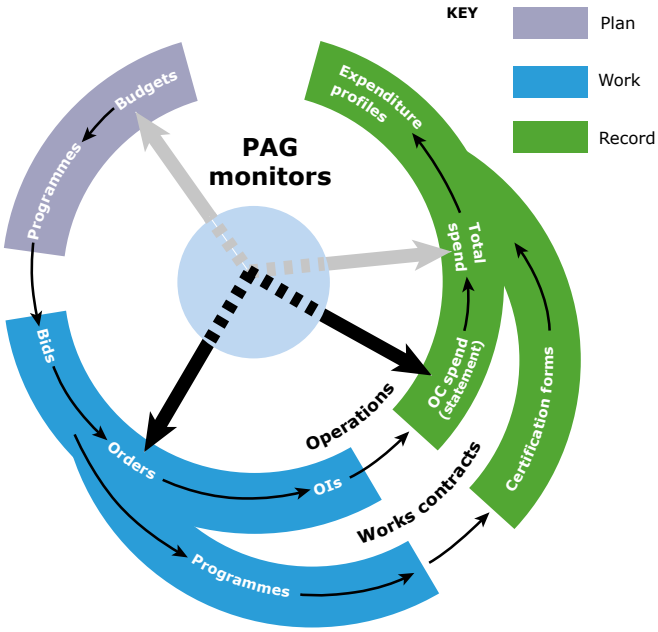


Figure 8 - Financial monitoring process

Financial Management of Programmes

Budgetary Control

Budgetary control by the OCs is an important management responsibility. It is important that the OCs exercise good budgetary control regardless of funding levels, as there may be little scope to revise programmes if there are any significant increases in scheme costs, particularly towards year end. This risk has been recognised by Transport Scotland and is included within the PAG audit and monitoring programme.

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 2018/19 is shown in Figure 9.

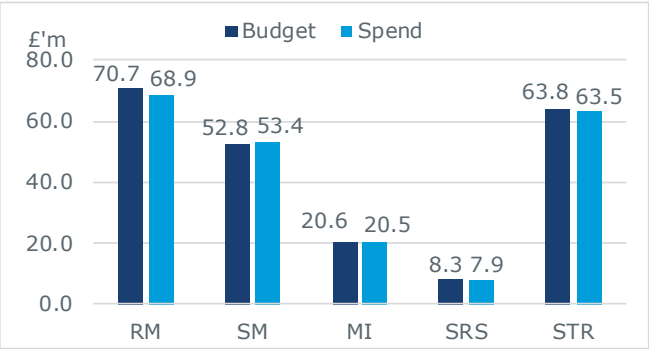


Figure 9 - Spend v Budget (excluding CPF) all Units

Spend (excluding CPF) overall was less than budget by £1.9m and primarily related to RM with an under spend of £1.8m (3%). On a Unit basis, SE was the main contributor to the under spend at £1.4m. Comments on individual Unit performance is noted overleaf.

Financial Management of Programmes

NW unit

Net spend of £60.4m was £217k (0.4%) less than budget. On a month by month basis, actual monthly spend varied with monthly budgeted spend by an average of 15% and for construction spend the variance was 19%.

Figure 10 shows how the OC managed its budget at budget category level. This notes budget under spend against RM of £520k (3%) and SRS at £246k (13%) offset by over spends against STR of £422k (3%), SM of £147k (1%).

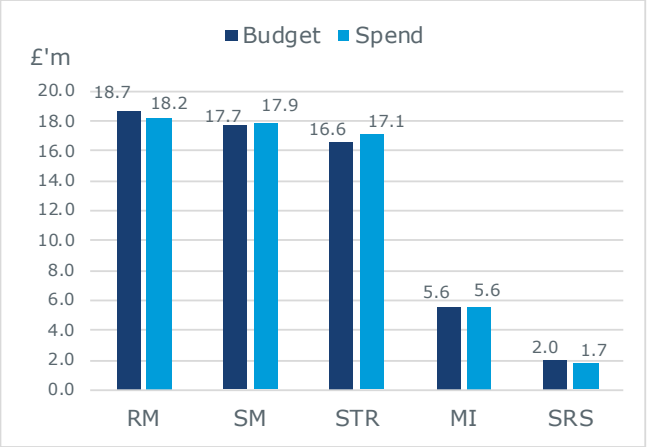


Figure 10 - NW Budget v Spend (excluding CPF)

SW unit

Net spend of £62.2m was in line with budget. On a month by month basis, actual monthly spend varied with monthly budgeted spend by an average of 16% and for construction spend the variance was 12%.

Figure 11 shows how the OC managed its budget at budget category level. This notes budget under spend against RM of £358k (2%) offset by over spends against STR of £187k (1%), SM of £146k (1%) and MI of £99k (1%).

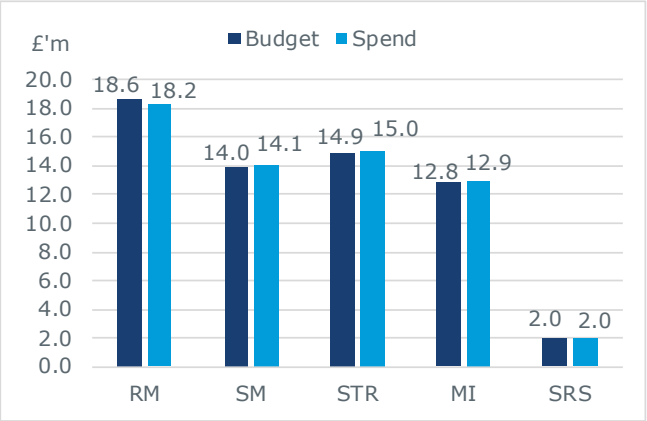


Figure 11 - SW Budget v Spend (excluding CPF)

NE unit

Net spend of £32.9m was £161k (0.5%) less than budget. On a month by month basis, actual monthly spend varied with monthly budgeted spend by an average of 20% and for construction spend the variance was 46%.

Figure 12 shows how the OC managed its budget at budget category level. This notes budget under spend against RM of £239k (2%) offset by over spend against SM of £100k (1%).

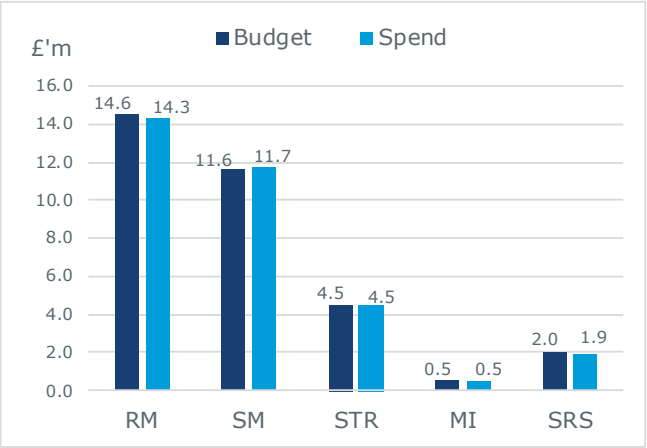


Figure 12 - NE Budget v Spend (excluding CPF)

Financial Management of Programmes

SE unit

Net spend of £33.3m was £1.4m (4%) less than budget. On a month by month basis, actual monthly spend varied with monthly budgeted spend by an average of 11% and for construction spend the variance was 32%.

Figure 13 shows how the OC managed its budget at budget category level. This notes budget under spend against STR of £805k (14%), RM of £595k (4%) and SRS of £125k (5%) offset by over spend against SM of £155k (2%).

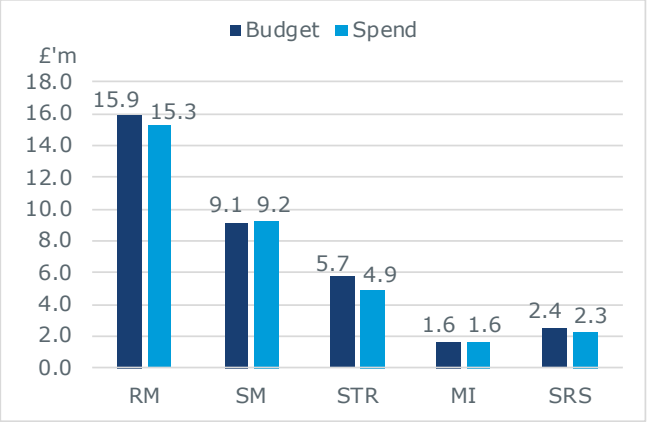


Figure 13 - SE Budget v Spend (excluding CPF)

FB unit

Net spend of £25.5m was £146k (1%) less than budget. On a month by month basis, actual monthly spend varied with monthly budgeted spend by an average of 27% and for construction spend the variance was 23%.

Figure 14 shows how the OC managed its budget at budget category level. This notes budget under spend against RM of £150k (5%).

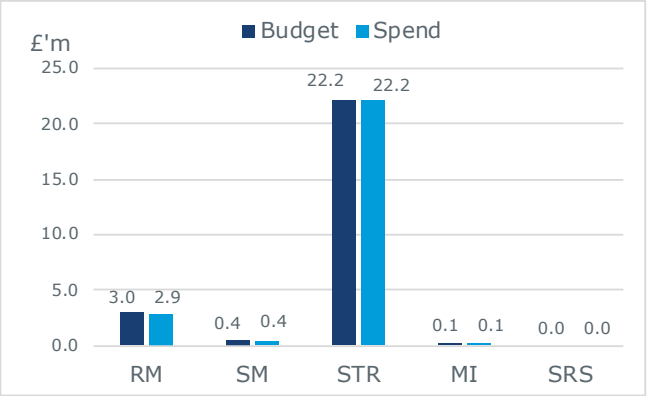


Figure 14 – FB Budget v Spend (excluding CPF)

All units

Table 16 reflects OC performance in spending its budget throughout the period, with comments on individual Unit performance noted above. PAG will continue to monitor this aspect of contract budgetary control.

	NW 2018/19	SW 2018/19	NE 2018/19	SE 2018/19	FB 2018/19
Budget, Spend and Programmes					

Table 16 - Budget, Spend and Programmes Rating

Financial Management of Schemes

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 then 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 to review whether spend for each scheme exceeded order value. PAG also reported on the relationship between budget, order value and spend for operations.

Bids

Overall performance for all units except FB was Fair, with schemes completed for at least two months with no revised bids submitted adjusting for over or under spends. Performance in FB unit was Good where generally schemes were completed for at least one month before revised bids were submitted adjusting for over or under spends.

	NW 2018/19	SW 2018/19	NE 2018/19	SE 2018/19	FB 2018/19
Bids					

Table 17 - Bids Rating

Order v Spend

Performance was Fair in all units except FB, with spend exceeding orders on a regular basis. Performance was Good in FB unit where spend occasionally exceeded orders.

	NW 2018/19	SW 2018/19	NE 2018/19	SE 2018/19	FB 2018/19
Order v Spend					

Table 18 - Order v Spend Rating

Financial Management of Schemes

Scheme Completion

Performance in closing out schemes varied within the units. SW unit, with a Poor performance, had a significant number of schemes still open where construction had taken place in the period. NE, SE and FB units had a Fair performance with a moderate number of schemes still open. NW unit performance was Good making a substantial effort in closing out the backlog of schemes due to be marked as complete closing out over 3,700 schemes in the period.

	NW 2018/19	SW 2018/19	NE 2018/19	SE 2018/19	FB 2018/19
Scheme Completion					

Table 19 - Scheme Completion Rating

Expenditure Profiling

Performance was Good across all units. Profiles were submitted within timescales. Issues encountered included profiles not matching budgets, scheme costs being split equally over multiple periods and use of bucket code schemes.

	NW 2018/19	SW 2018/19	NE 2018/19	SE 2018/19	FB 2018/19
Expenditure Profiling					

Table 20 - Expenditure Profiling Rating

Statements/ Invoices

Performance was Good in all units except NW which was Excellent. All statements were submitted within required timescales although some supporting information was not available in CCMf at time of statement submission. There were no issues with submission of works contractor invoices.

	NW 2018/19	SW 2018/19	NE 2018/19	SE 2018/19	FB 2018/19
Statements / Invoices					

Table 21 - Statement / Invoices Rating

Financial Management of Schemes

Part B and C Items

PAG undertakes a review of the OCs applications for payment with any issues highlighted for discussion via PAG Statement Review Notes process. Should there be any parts of the statement for which payment is disputed these are recorded in separate parts of the statement (Parts B & C). Generally, all OCs responded to issues reported in PAG's Statement Review Notes within a reasonable timescale. SW unit was slow in closing out historical issues with some remaining open for more than two years, it has been actively working to provide evidenced to close out long-standing issues.

	NW 2018/19	SW 2018/19	NE 2018/19	SE 2018/19	FB 2018/19
Part B and C Items					

Table 22 - Part B and C Items Rating

Measurement and Valuation of Operations

In the annual period PAG undertook 102 Operating Instruction reviews across all units. These reviews look at the schedule of rate items used by Operating Companies to measure the cost of operations to check the appropriate items and costs have been charged (Method of Measurement). These reviews also look at the files saved to scheme folders to ensure all required records are in place.

Method of Measurement

PAG rated the method of measurement applied to a Good standard across the Measurement and OI reviews carried out in all five Units. PAG monitoring noted recurring issues relating to items either being overclaimed, no justification provided, incorrect application of time band adjustments, incorrect application of supplementary services, or items not measured in accordance with the preambles.

	NW 2018/19	SW 2018/19	NE 2018/19	SE 2018/19	FB 2018/19
Quality of Method of Measurement From Measurement and OI Reviews					

Table 23 - Method of Measurement Rating

Financial Management of Schemes

Records

During the reporting period the records observed for Operating Instruction reviews were of a Good standard in all units except NE where the records observed were of a Fair standard. The most common issues found were missing delivery tickets, grip test results, laying records, measurement records, waste transfer notes and maintenance scheme detail.

	NW 2018/19	SW 2018/19	NE 2018/19	SE 2018/19	FB 2018/19
Quality of Records From Measurement and OI Reviews					

Table 24 - Records Rating

OC Management of CCMF

As part of the financial management of schemes and budget OCs are required to utilise the Contract Control and Management Function (CCMF) of IRIS. There were generally issues found with all OCs not fully populating CCMf with all appropriate information.

	NW 2018/19	SW 2018/19	NE 2018/19	SE 2018/19	FB 2018/19
OC Management of CCMf					

Table 25 - Management of CCMf

Financial Management of Schemes

Remedial Notices

A total of nineteen Remedial Notices were issued by Transport Scotland between April 2018 and March 2019, four in NW, eight in SW, three each in NE and SE and one in FB. When compared to previous years this number shows an increase in the amount of Remedial Notices. Three Remedial Notices also remain open from previous periods. Two in the SW unit and one in the SE unit.

These areas of contract delivery remain high in the PAG Risk Register and will subsequently remain in ongoing audit and monitoring programmes as PAG endeavours to work with Operating Companies to improve performance.

BEAR NW

- Inventory Condition Rating
- Inspection and Repair of road marking defects
- Compliance with structures inspection certification qualifications (BICS).
- Detailed Inspections

BEAR NE

- Inventory Condition Rating
- Inspection and Repair of road marking defects
- Compliance with structures inspection certification qualifications (BICS).

Scotland TranServ SW

- Flooding reports in IRIS,
- Winter brine saturators
- Compliance with structures inspection certification qualifications (BICS).
- Winter Records
- Structures cyclic maintenance
- Inspection and Repair of road marking defects
- Structures half joints,
- Winter service plant not having snowploughs

Remedial Notices remaining open:

- Inventory validation and condition rating (July 2015)
- Repair of Cat 1 lighting defects (March 2017).

Amey FB

- Compliance with structures inspection certification qualifications (BICS).

Amey SE

- Requirements of the JTRC role
- Non-delivery of bridge documents (High load grid project),
- Compliance with structures inspection certification qualifications (BICS).

Remedial Notices remaining open:

- Inventory validation (September 2015).

	NW 2018/19	SW 2018/19	NE 2018/19	SE 2018/19	FB 2018/19
Number of Remedial Notices Issued	4	8	3	3	1

Table 26 - Number of Remedial Notices Issued

Appendix A:

Annual Performance and Quality Indicators

Health and Safety	NW		SW		NE		SE		FB	
	2017/18	2018/19	2017/18	2018/19	2017/18	2018/19	2017/18	2018/19	2017/18	2018/19
PI 01 RIDDOR		0.15		0.16		0.80		0.02		0.00
PI 02 Accident Frequency Rate		1.58		2.41		1.48		1.28		7.56

Inspections	NW		SW		NE		SE		FB	
	2017/18	2018/19	2017/18	2018/19	2017/18	2018/19	2017/18	2018/19	2017/18	2018/19
PI 03 or 3a(FB) Repair of Category 1 Defects	94%	95%	91%	94%	92%	92%	95%	94%	97%	98%
PI 3b(FB) Repair of Category 1 Forth Road Bridge									100%	100%
PI 05 Safety Inspections and Patrols	99%	97%	98%	96%	99%	98%	100%	100%	100%	100%
Quality of safety Inspections										
PI 06 Detailed Inspections	65%	66%	87%	80%	92%	83%	87%	82%	72%	
Quality of Detailed Inspections										

Maintenance	NW		SW		NE		SE		FB	
	2017/18	2018/19	2017/18	2018/19	2017/18	2018/19	2017/18	2018/19	2017/18	2018/19
PI 07 Maintenance	80%	82%	90%	92%	70%	75%	89%	91%	90%	
Quality of Cyclic Maintenance										
Quality of Routine Maintenance										

Electrical	NW		SW		NE		SE		FB	
	2017/18	2018/19	2017/18	2018/19	2017/18	2018/19	2017/18	2018/19	2017/18	2018/19
MI 01 Well Lit Network Average	97%	98%	92%	92%	97%	97%	97%	97%	80%	95%
Quality of Electrical Inventory										

Appendix A:

Annual Performance and Quality Indicators

Structures	NW		SW		NE		SE		FB	
	2017/18	2018/19	2017/18	2018/19	2017/18	2018/19	2017/18	2018/19	2017/18	2018/19
PI 08 Structures Principal Inspections	100%	100%	90%	100%	96%	100%	100%	100%	81%	98%
PI 09 Structures General Inspections	100%	99%	99%	100%	98%	99%	100%	99%	100%	100%
Quality of Principal and General Inspections Reporting										
PI 10(FB) Forth Road Bridge Inspections									100%	100%
PI 10 or 12a(FB) Structures Maintenance	95%	88%	93%	91%	94%	93%	98%	94%	100%	100%
Quality of Structures Cyclic Maintenance										
Quality of Structures Routine Maintenance										
PI 12b(FB) Structures Maintenance -Forth Bridge									100%	100%
PI 27a (FB) Access Systems Inspection - Forth Bridge									100%	99%
PI 27b (FB) Access Systems Maintenance and Testing-Forth Bridge									100%	91%
PI 29 (FB) Programmed Special Inspections-Forth Bridge									100%	100%

Network Operations	NW		SW		NE		SE		FB	
	2017/18	2018/19	2017/18	2018/19	2017/18	2018/19	2017/18	2018/19	2017/18	2018/19
PI 04 Incident Response	98%	98%	95%	92%	95%	95%	96%	98%	95%	97%
PI 11 or 13(FB) Winter Service Treatments	100%	100%	89%	98%	99%	99%	100%	100%	100%	100%
Quality of Winter Service										

Measurement and Valuation of Operations	NW		SW		NE		SE		FB	
	2017/18	2018/19	2017/18	2018/19	2017/18	2018/19	2017/18	2018/19	2017/18	2018/19
Quality of Method of Measurement From Measurement and OI Reviews										
Quality of Records From Measurement and OI Reviews										

Financial	NW		SW		NE		SE		FB	
	2017/18	2018/19	2017/18	2018/19	2017/18	2018/19	2017/18	2018/19	2017/18	2018/19
PI 12 or 14(FB) Actual Spend Against Profile	84%	87%	88%	92%	69%	85%	98%	95%	98%	99%
PI 13or 15(FB) Works Contracts Cost Estimates	74%		85%	89%			100%	100%	90%	
PI 14 or 16(FB) Works Contracts Out Turn Cost			88%	99%			100%	100%		
Budget, Spend and Programmes										
Bids										
Order v Spend										
Scheme Completion										
Expenditure Profiling										
Statements / Invoices										
Part B and C Items										
OC Management of CCMf										

Appendix A:

Annual Performance and Quality Indicators

Quality Management System	NW		SW		NE		SE		FB	
	2017/18	2018/19	2017/18	2018/19	2017/18	2018/19	2017/18	2018/19	2017/18	2018/19
PI 15 or 17(FB) Closure of Non-Conformances	100%	97%	99%	100%	99%	100%	100%	86%	95%	84%
PI 16 or 18(FB) Submission of Reports	100%	100%	100%	100%	100%	100%	100%	100%		100%
PI 17 or 19(FB) Planning Applications	100%	99%	97%	99%	100%	100%	100%	98%	100%	100%
PI 18 or 20(FB) Communications Response	98%	94%	100%	100%	100%	100%	97%	97%	99%	100%
PI 20 or 22(FB) Grassed Area					96%	99%	100%	100%	100%	100%
PI 24 (FB) Community Engagements & Community Benefits										100%

Inventory and Condition Ratings	NW		SW		NE		SE		FB	
	2017/18	2018/19	2017/18	2018/19	2017/18	2018/19	2017/18	2018/19	2017/18	2018/19
PI 21 or 23a(FB) Recording Inventory Condition Rating					38%	15%	57%	88%	96%	
PI 23b (FB) Recording Inventory Condition Rating Forth Bridge									100%	

Sustainability	NW		SW		NE		SE		FB	
	2017/18	2018/19	2017/18	2018/19	2017/18	2018/19	2017/18	2018/19	2017/18	2018/19
MI 17 Use of Reused, Recycled and Renewable Materials Annual Average	0%	0%	10%	7%	0%	0%	10%	9%	0%	14%
MI 18 Waste Generation and Management Annual Average	100%	100%	100%	98%	100%	100%	100%	100%	89%	91%

Remedial Notices	NW		SW		NE		SE		FB	
	2017/18	2018/19	2017/18	2018/19	2017/18	2018/19	2017/18	2018/19	2017/18	2018/19
Number of Remedial Notices Issued	2	4	1	8	0	3	0	3	0	1

Appendix B:

Operating Company unit fact files

North West fact file

Managed and maintained by:

BEAR Scotland Ltd.
BEAR House
Inveralmond Road
Inveralmond Industrial Estate
Perth
PH1 3TW

Total route length of the network in NW:
1,422km

Number of structures:
1,502

Budget for maintaining trunk roads in NW this period:
£60.6m

South West fact file

Managed and maintained by:

Scotland TranServ
Oatlands House
150 Polmadie Road
Glasgow
G5 0HD

Total route length of the network in SW:
619km

Number of structures:
1,543

Budget for maintaining trunk roads in SW this period:
£62.2m

Appendix B:

Operating Company unit fact files

North East fact file

Managed and maintained by:

BEAR Scotland Ltd.
BEAR House
Inveralmond Road
Inveralmond Industrial Estate
Perth
PH1 3TW

Total route length of the network in NE:
598km

Number of structures:
489

Budget for maintaining trunk roads in NE this period:
£33.1m

South East fact file

Managed and maintained by:

Amey Plc.
6A Dryden Road
Bilston Glen
Loanhead
EH20 9TY

Total route length of the network in SE:
473km

Number of structures:
632

Budget for maintaining trunk roads in SE this period:
£34.7m

Appendix B:

Operating Company unit fact files

Forth Bridges fact file

Managed and maintained by:

Amey Plc.
Forth Road Bridge
Administration Office
Ferrymuir Gait
South Queensferry
EH30 9SF

Total route length of the network in FB:
33km

Number of structures:
129

Budget for maintaining trunk roads in FB this period:
£25.7m

Appendix C:

Glossary of main 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. FB was subsequently introduced on 1 June 2015.

Category 1 defect
A Defect that necessitates prompt attention because it presents:

(i) an immediate or imminent hazard, or

(ii) a risk of rapid structural deterioration to the affected element.

Category 2 Defect
Any Defect which is not a Category 1 Defect.

CCMf (Contract control and management function)

A part of IRIS - computer-based financial management system supplied by Transport Scotland and operated by the Operating Companies. 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 financially and where money is being spent.

Contract price fluctuation factor (CPF)
Inflation adjustments to the OC's tendered rates and prices.

Financial year
The period between 1 April 2018 and 31 March 2019

IRIS (Integrated road information system)
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.

Performance indicators
A numerical measure of the Operating Company's compliance with a requirement of this Contract.

Monitoring indicators
A numerical measure of service provision as stated in the Contract.

Non-conformance (NC)
Default by the Operating Company or defect in operations.

Notice of non-conformance (NNC)
The process in the contract used by PAG to flag up where the OCs are not complying with the contract.

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.

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.

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.

Appendix C:

Glossary of main terms

RMMf (Routine maintenance management function)

A part of IRIS - 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.

SMS (Structures management system)

A part of IRIS - 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.

Works Contract

Any works undertaken under a separate contract, designed, procured and supervised by Operating Companies. Such contracts are between the Scottish Ministers and a works contractor for execution of a scheme or part of a scheme.

Abbreviations

4G	Fourth Generation Term Contract for the Management and Maintenance of the Scottish Trunk Road Network
BICS	Bridge inspector certification scheme
CCMF	Contract control and management function
CDM	The Construction (Design and Management) Regulations 2015
CPF	Contract price fluctuation
DRMP	Disruption Risk Management Plan
FB	Forth Bridges
FCBC	Forth Crossing Bridge Constructors
H&S	Health and safety
IRIS	Integrated road information system
ISO	International Standards Organisation
LED	Light emitting diode
MI	Monitoring indicators
NNC	Notice of non-conformance
OC	Operating Company
ORI	Observation resulting from inspection
PAG	Performance audit group
PI	Performance indicators
QMS	Quality management system
RMMF	Routine maintenance management function
SM	Structural maintenance
SMS	Structures management system
SRS	Strategic road safety
STR	Structures
VRS	Vehicle restraint system