



Highways England – Roadworks Management

*Final Report:
Executive Summary*

Prepared for ORR

24th May 2017



Notice

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Credo has been commissioned by the Office of Rail and Road to explore Highways England's approach to roadworks planning and communications

Study objective:

Understand Highways England's current traffic management practices and performance with regards to both the planning and communication of roadworks, and identify best practice opportunities

Current HE practices and performance

- This work aims to understand HE's current practices and performance and identify current strengths and areas for improvement
- In carrying out this work we have spoken to a total of 37 interviewees, including:
 - Highways England individuals and teams [12 interviewees]
 - Industry stakeholders and experts [5 interviewees]
 - Contractors [15 interviewees]
 - Road users and user groups [5 interviewees]
- Questions covered HE's current approach to roadworks planning and communications, and areas for improvement
- Secondary research was used to complement and expand on primary research findings
 - A full list of sources can be found in the appendix (see p.87)

Examples of best practice in other infrastructure owners/operators

- This work aims to draw on best practice from other roads and broader infrastructure operators, in the UK and internationally
- Given the time and resource constraints, a systematic approach was taken to understanding which organisations would be most valuable to explore
 - ORR's top 12 international roads comparators were selected for their similarity to Highways England; more detail can be found in the appendix (see p.83)
 - In addition, a number of other international, and UK-based road operators were identified through primary and desk research
 - Broader UK infrastructure operators were also approached to identify best practice in adjacent industries
- We completed interviews with a total of 35 interviewees, including:
 - International roads operators [19 interviewees]
 - Local Authorities [8 interviewees]
 - DBFO representatives [2 interviewees]
 - UK-based broader infrastructure operators [6 interviewees]

We aim to understand the key stages of roadworks planning and communication, and conclude on HE's current performance and opportunities for improvement

Roadworks performance is driven by both direct roadworks practices and the broader asset management strategy (the latter of which is out of scope)

Fig.1: Key elements impacting upon roadworks effectiveness

End to end roadworks delivery
Operational delivery of roadworks projects, including key stages such as:

Design

Scheduling

Ongoing works mgt.

Continuous improvement

Ongoing Comm'ns

Performance management
Tracking and monitoring of performance across regions and roadworks projects. Management of underperformance and target setting

Asset management
Whole life planning, including material planning, maintenance strategy and schedules, enhancement and renewals planning etc.

Impacts upon

- The effectiveness and efficiency of roadworks planning and communication vs. HE objectives for a given roadworks project

Report coverage

Core focus

- HE ability to drive improvements

Considered within roadworks delivery and at an overall high level

- The amount and frequency of roadworks required overall

Out of scope – Not addressed



This report has a core focus on the roadworks delivery stages, whilst also considering performance management at a high level

Agenda

- **Executive summary**
- Appendix

Background context and roadworks objectives/ constraints

Background context

- Highways England (HE) is responsible for operating and maintaining the Strategic Road Network of motorways and trunk roads throughout England, and is tasked with delivering the government's Road Investment Strategy (RIS), a programme of investment into the network with funding worth over £15bn from 2015/16-2019/20
 - Works split into two major types: **major projects**, which involve a clear enhancement or improvement to existing infrastructure; and **operations**, which include 'business-as-usual asset renewal or modernisation and planned and reactive maintenance activities
 - For the most part, HE focuses upon contracting third parties rather than delivering works itself
- As roadworks on the Strategic Road Network (SRN) increase due to the RIS, Highway's England faces declining road user satisfaction with roadworks, and pressure on network availability
 - The National Road Users' Satisfaction Survey (NRUSS) tracks Strategic Road Network users' satisfaction across a range of factors, including roadworks management, with a trend towards decreasing roadworks satisfaction amongst road users since 2014
 - HE tracks a network availability KPI, measuring the availability of lanes on the SRN by region over a rolling year, with a target of exceeding 97%. Although this is currently at 98.4% there has been a downwards trend since 2014
 - Transport Focus' research points to a link between road user satisfaction and roadworks performance, and highlights a number of issues and recommendations for HE consideration

As roadworks on the SRN increase due to the RIS, HE faces increasing pressure to optimise roadworks performance

Roadworks objectives and constraints

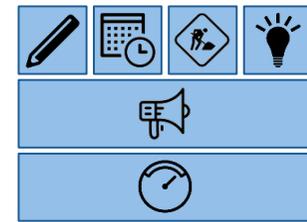
Key objectives

- In its planning and delivery of roadworks, HE is typically looking to prioritise safety whilst delivering the RIS and improving customer service
 - **Safety** is HE's foremost imperative, ensuring no one is harmed when travelling or working on Highways England's roads
 - **Delivering the RIS** encompasses two key points: delivering it on time and efficiently (i.e. to budget). Cost effectiveness and timing of schemes are guiding objectives of roadworks planning and execution
 - **Customer service** is the third key objective considered in roadworks planning and management decisions, with an aim to minimise the impact on the travelling public, businesses and other local stakeholders and communities
- Broader HE objectives include improving environmental outcomes, encouraging economic growth and helping vulnerable users of the network are also considered

Constraints

- Roadworks management practices and performance are also driven/ constrained by a broader set of factors including:
 - The interdependence between different roads projects
 - Broader HE objectives
 - Political, economic, social and technological dynamics

Whilst broader factors and constraints were acknowledged by research participants, this report focuses on end-to-end roadworks practices

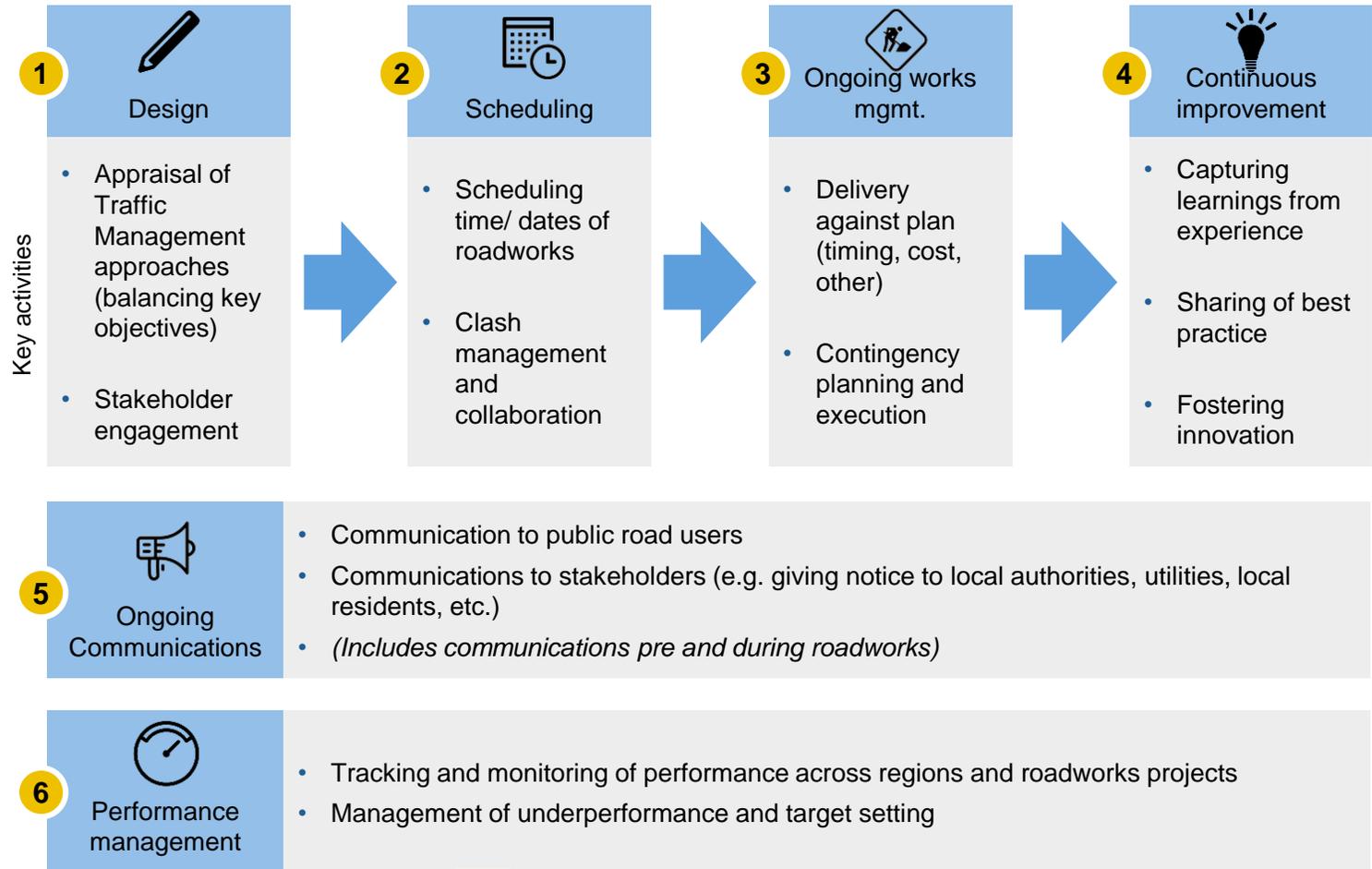


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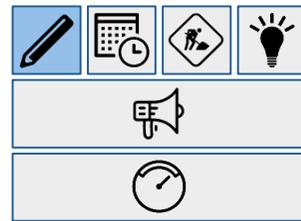
End-to-end roadworks process: Six main stages addressed

Fig. 2: Indicative roadworks delivery process

- The end-to-end process for planning and communicating roadworks can be considered in five broad stages
- We use this framework to assess HE's current practices and performance, as well as to identify examples of best practice
- Many of these activities are fulfilled by contractors, or a collaboration of HE and contractors
 - Throughout the report we have tried to highlight where either a contractor or HE has responsibility for a given activity
- A sixth stage (performance management) also influences roadworks delivery and is considered separately



This report considers the roadworks process in six main stages, from scheme design through to continuous improvement, and alongside communications and performance management



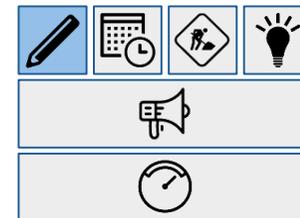
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End to end roadworks delivery: Stage 1 – Design [1/2]

	Key findings
Considerations	<ul style="list-style-type: none"> In the roadworks design stage, HE is looking to balance three key objectives: safety, customer service and delivering the Road Investment Strategy <ul style="list-style-type: none"> –Secondary consideration is then given to broader objectives such as environmental outcomes and encouraging economic growth
Current practices and rationale	<ul style="list-style-type: none"> Roadworks design follows a different process for Major Projects and operations <ul style="list-style-type: none"> –Major projects: Contractors use a range of software tools (either in-house or HE proprietary tools) to model the impact of different roadworks designs against HE objectives, and to select and develop the preferred option (in conjunction with HE) to take through statutory procedures and work up to the construction preparation stage –Operations: For operations, the design process is more variable and driven by the contractor, and more specifically an individuals’ expertise. The contractor works within prescribed ‘working windows’, which are generated by HE’s Performance Analytics Unit and communicated to contractors through Regional Intelligence Units (RIUs). Following the development of its design, it applies to HE for a Temporary Traffic Regulation Order (TTRO) to permit it to begin work on the Strategic Road Network (SRN) Through these processes HE aims to leverage the expertise of the contractor (and its ways of working), rather than be too prescriptive
Key strengths	<ul style="list-style-type: none"> A number of strengths have been flagged around HE’s current design processes, particularly with regard to major projects <ul style="list-style-type: none"> –Pragmatic, outcome-driven approach, aiming to reduce process and regulatory burdens on contractors on major projects –Strong level of HE and contractor expertise involved in the process –The introduction of project sponsors and the oversight role they carry out is viewed positively –Strong stakeholder engagement on major projects



HE has particular strength in major projects roadworks planning, with a robust approach to design and stakeholder input, whilst operations design is more variable, driven by the contractor and an individuals’ professional expertise



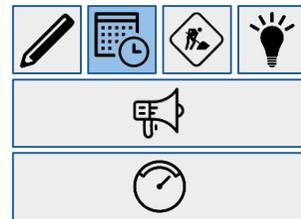
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End to end roadworks delivery: Stage 1 – Design [2/2]

	Key findings
Areas for improvement	<ul style="list-style-type: none"> The key areas for improvement focus on the balance of customer service vs. other objectives, with a view that it was not sufficiently prioritised, whilst the reliance of operations roadworks design on an individuals' knowledge and expertise was flagged as a risk <ul style="list-style-type: none"> –Road users deprioritised: Whilst HE appears to have a fairly good understanding of road user preferences (informed by customer insight research) it appears to lack a clear analytical framework to balance the trade off between user requirements and other objectives during the design phase. As a result, road users may be deprioritised and decisions made based on HE or contractor judgement rather than an objective framework of criteria <ul style="list-style-type: none"> –Long stretches of roadworks, high 'acceptable delay' thresholds in working windows and a perceived shift to prioritise cost were all identified as examples of this (We note HE considers some of this to be about communication rather than prioritisation of objectives) –Reliance on individuals: Within operations, the reliance on specific individuals with local network knowledge (and associated lack of knowledge management) was flagged as a risk
External learnings	<ul style="list-style-type: none"> Research into other UK and international road owners/ operators highlights a number of learnings with regards to prioritising and/ or communicating with road users: <ul style="list-style-type: none"> –In the Netherlands, the Rijkswaterstaat adopts an approach to network management designed to improve road user satisfaction, including 'Smart Planning', a process that prohibits roadworks on diversion and parallel routes –Certain road operators have 'customer-centric' guidelines for design e.g. acceptable delay times per 100 km, amount of roadworks per 100 km –Stakeholder objectives meetings can be used to formally balance objectives



Conclusions and potential areas of opportunity	<ul style="list-style-type: none"> There are a number of strengths within HE's roadworks design process that should be retained and developed. Beyond this there is potential opportunity for HE to: <ol style="list-style-type: none"> 1 Develop a more 'customer-centric' approach to roadworks design, both through its objectives (and how these are balanced and prioritised through the design process, using a clear appraisal framework), and communication 2 Review guidelines around length and spacing regulations, and acceptable delays 3 De-risk and build in process around operations roadworks design
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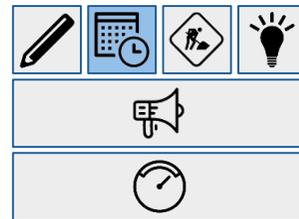
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End to end roadworks delivery: Stage 2 – Scheduling [1/2]

	Key findings
Considerations	<ul style="list-style-type: none"> The scheduling process is required to provide visibility of planned roadworks to all stakeholders (including HE, contractors, Local Authorities (LAs) and statutory undertakers such as utilities and infrastructure operators), balance flexibility vs. certainty in booking roadworks slots, identify where planned roadworks overlap with or disrupt other roadworks, and manage these clashes effectively
Current practices and rationale	<ul style="list-style-type: none"> There are four key stages in the roadworks scheduling process: <ul style="list-style-type: none"> – HE generates and publishes working windows, time slots within which contractors can complete operations works on the Strategic Road Network (SRN) (also used to inform major projects timings) – Contractors make provisional bookings for sections of the road using the Scheduled Road Works (SRW) system – The Network Occupancy Manager captures relevant notices posted by Electronic Transfer of Notices (ETON) for other stakeholder works in the area, and uses SRW for roadworks clash identification and resolution – Firm booking data from SRW system is used to communicate roadworks to the public, through Traffic England and variable messaging signs (VMS), and also via other methods including press releases and regional weekly bulletins The SRW system is used as a ‘single source of truth’ to manage the SRN, and contractors are incentivised to ensure bookings are entered accurately and in a timely manner
Strengths	<ul style="list-style-type: none"> A number of aspects of the current systems and processes were identified as strengths: <ul style="list-style-type: none"> – Working windows is seen as a highly effective method to identify appropriate times to work on the network (for operations) – Network Occupancy Management System (NOMS), the replacement for SRW, is due to be introduced in August 2017 and is believed to offer significant improvements <ul style="list-style-type: none"> – It should deliver improved usability, greater integration with Traffic England and variable messaging signs (VMS) and more effective clash management (both on the SRN and on local networks)



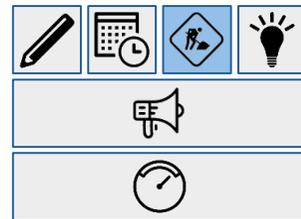
HE’s scheduling process involves evaluating ‘working windows’ and then booking the required slots using the Scheduled Road Works system to make bookings and manage clashes. The former is believed to work well with the latter expected to improve with the implementation of the new Network Occupancy Management System (NOMS) system



Executive Summary

End to end roadworks delivery: Stage 2 – Scheduling [2/2]

	Key findings
Areas for improvement	<ul style="list-style-type: none"> The key areas for improvement were highlighted as: <ul style="list-style-type: none"> – Weak collaboration and clash management with broader stakeholders (local authorities, statutory undertakers and industry stakeholders (e.g. haulage operators)) – Data is sometimes mistranslated as it is transferred from the SRW system to Traffic England or variable messaging signs, resulting in the communication of incorrect roadworks information – A focus on road-based scheduling clashes rather than taking a customer journey view (particularly where there are differing impacts for users travelling at different times of day which is increasingly important as road use changes and an increasing number of overnight haulage journeys are taken across the country) – Consideration of the broader economy: There appears to be limited consideration of the impact of specific roadworks schemes upon the broader economy
External learnings	<ul style="list-style-type: none"> The practices of other operators in this area point to some potential opportunities regarding system usage to increase visibility, and incentivising collaboration: <ul style="list-style-type: none"> – The Flanders Department of Mobility and Public Works and TfL both benefit from using single roadworks scheduling systems that are shared with other local road operators, local authorities, contractors and statutory undertakers, giving stakeholders full visibility of scheduled roadworks, and allowing for better clash identification and resolution – TfL actively encourages contractor collaboration and effective use of roadworks spaces, waiving the lane rental fee for roadworks if multiple parties use roadworks spaces simultaneously
Conclusions and potential areas of opportunity	<p style="text-align: center;"></p> <ul style="list-style-type: none"> There appear to be two main areas where HE's scheduling practices could potentially improve: <ol style="list-style-type: none"> 4 Enhance broader stakeholder engagement, particularly with local authorities and utilities <ol style="list-style-type: none"> 4a The introduction of NOMS should support this from a data accuracy and scheduling visibility perspective 4b However there may be opportunities to take this further (e.g. increased collaboration and/ or a single roadworks scheduling system) 5 Develop a more agile and holistic approach to traffic management focused around users' end-to-end journeys and the broader impact roadworks have upon the economy (accounting for differing impacts on users using the roads at different times of day, and able to adapt to changing traffic patterns)

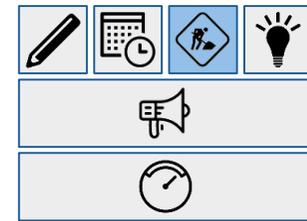


End to end roadworks delivery: Stage 3 – Ongoing works management [1/2]

	Key findings
Considerations	<ul style="list-style-type: none"> Throughout the delivery of works HE aims to monitor activity vs. plan, work collaboratively with the contractor and manage change effectively where required
Current practices and rationale	<ul style="list-style-type: none"> As with roadworks design, HE takes a more involved approach to ongoing works management for major projects vs. operations <ul style="list-style-type: none"> Major projects: The HE project sponsor interacts with the contractor throughout to ensure the project is being delivered in line with HE’s objectives. Stage gate reviews are conducted throughout to track performance vs. objectives, and exception reports are produced if objectives are not being met. HE therefore has a degree of direct oversight and is kept informed if roadworks were to overrun on time or budget, or if delays were deemed to be in excess of the levels anticipated Operations: HE adopts a more ‘hands-off’ approach to ongoing works management, tracking activity through SRW and monitoring performance through Network availability, NRUSS¹ and the new Delay in Roadworks KPIs Across both, traffic officers or other HE representatives also carry out spot audits using customer focused checklists Throughout this stage, HE aims to ensure projects are delivered in line with its overall objectives
Strengths	<ul style="list-style-type: none"> A number of aspects of HE’s monitoring process are perceived to be effective, including: <ul style="list-style-type: none"> The audit and stage gate process ensures projects are being delivered in line with plan Formal checklists ensure these processes consistently measure performance against a standardised list of objectives



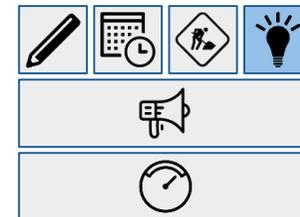
HE adopts a formal approach to overseeing major projects, whilst taking a more hands-off approach to operations roadworks, relying on the lead contractor to oversee and manage works. In both cases there is limited specific measurement of roadworks delivery vs. plan



End to end roadworks delivery: Stage 3 – Ongoing works management [2/2]

	Key findings
Areas for improvement	<ul style="list-style-type: none"> Two main areas for improvement were highlighted with regards to HE’s ongoing works management processes: <ul style="list-style-type: none"> – Measurement vs. planned objectives: HE does not currently have a clear process (and required data) with which to monitor roadworks actual performance vs. planned objectives (though it does pick elements of this up through stage gate reviews and audits) – Misaligned contractor incentives: Contractors highlighted an increased tendency for roadworks to overrun, based on a lack of (dis)incentives. Relatedly, MACs and ASCs¹ place a significant amount of emphasis on accurate SRW reporting, sometimes incentivising the wrong behaviours, e.g. contractors are penalised for leaving a roadworks project two days earlier than booked in SRW – Usage of technology and ‘big data’: There is potential to make greater use of emerging technology and ‘big data’ to track traffic management effectiveness
External learnings	<ul style="list-style-type: none"> Unlike for other stages, there appears to be fewer obvious examples of other road operator best practice outside of HE, though some learnings exist around audit processes and the use of technology to manage ongoing works <ul style="list-style-type: none"> – Denmark was seen as particularly effective at deploying audits to ensure effective ongoing performance monitoring, also checking road signage several times a day for accuracy, and holding contractors to stringent targets – Transport Scotland appears to have an effective and formalised escalation process (to parliament) where roadworks do not meet planned targets (including road user delays). It makes good use of technology, tracking delays through roadworks using Bluetooth technology and CCTV – Vic Roads appears to have effective monitoring of ongoing and overrunning works, using a combination of people, process and real time technology to drive performance – A number of operators adopt a practice of penalising contractors for overruns, often through lane rental and/ or penalties
Conclusions and potential areas of opportunity	<ul style="list-style-type: none"> There is potential opportunity for HE to: <ol style="list-style-type: none"> 6 Review contractor incentives/penalties for scheme overruns, making sure these are correctly aligned with HE’s broader objectives and incentivise safe, efficient delivery built around the needs of the road user 7 Develop formalised, roadworks-specific performance tracking KPIs to measure actual performance vs. planned objectives 8 Increase use of emerging technology and ‘big data’ to improve tracking of traffic management effectiveness through roadworks



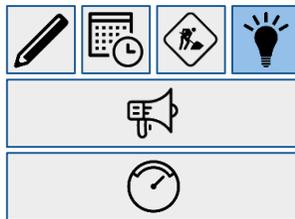


End to end roadworks delivery: Stage 4 – Continuous Improvement [1/2]

	Key findings
Considerations	<ul style="list-style-type: none"> • Continuous improvement, which is becoming increasingly important due to the increased demands of the RIS¹, is a function of several different aspects: learning from past experience, sharing best practice/learning from others, and fostering innovation within and into an organisation
Current practices and rationale	<ul style="list-style-type: none"> • HE has a range of measures in place to facilitate continuous improvement across the organisation, taking learnings from internal and external sources <ul style="list-style-type: none"> – Learning from experience: There are a number of formalised processes to track and learn from project experience, including lessons learned logging throughout and at the close of projects and road user feedback surveys – Sharing best practice/ learning from others: HE is an active member of several best practice sharing forums, allowing it to learn from international and domestic external organisations (and vice versa) – Fostering innovation: HE has increasingly begun to foster innovation through initiatives such as the Innovation Designated Fund and by becoming more flexible around existing standards or setting new ones
Strengths	<ul style="list-style-type: none"> • A number of strengths were identified around HE’s approaches to continuous improvement <ul style="list-style-type: none"> – It appears to be effective at facilitating best practice sharing amongst contractors and with other international highways authorities and working groups – HE monitors various metrics across its network and contractor base, and has a lessons learned process that contributes to effective knowledge management – Its public road user feedback survey (NRUSS²) is soon to be replaced by SRUS³ which will reach a wider user base and provide more specific data



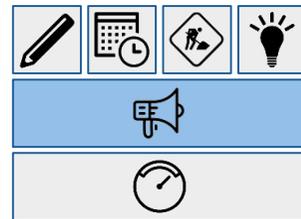
HE has a number of formalised processes to track and learn from performance (not all specific to roadworks) and plays a key role in facilitating best practice sharing and innovation among its contractors, all of which is viewed positively



End to end roadworks delivery: Stage 4 – Continuous Improvement [2/2]

Key findings	
<p>Areas for improvement</p>	<ul style="list-style-type: none"> • The key areas for improvement are focused upon incorporation of learnings from experience and best practice, and providing more specificity to the data and metrics tracked <ul style="list-style-type: none"> – Incorporation of learnings within HE: HE lacks a formalised mechanism to share knowledge within its own organisation, and has experienced mixed success at incorporating findings internally, with some stakeholders holding the perception that feedback received is not acted upon – Broader stakeholder feedback: It currently lacks a formal feedback gathering method for some of its stakeholders – Learnings from other sectors: HE appears not to look outside of the road sector for best practice across other relevant infrastructure sectors (e.g. rail) – Roadworks specific metrics: There are limited roadworks specific KPIs monitored, and lessons learned logs cover a broad range of areas, not all specific to roadworks – Fostering innovation: HE is viewed as becoming more innovative, but challenges around availability of funding and HE’s aversion to risk were identified
<p>External learnings</p>	<ul style="list-style-type: none"> • External road owners and operators illustrate a number of learnings around incorporating learnings, sharing best practice and innovation: <ul style="list-style-type: none"> – The Danish Vejdirektoratet and Kent County Council use technology to consolidate and review learnings from roadworks projects, contributing to proactive learning – The Federal Highways Administration in the US compiles a Best Practice Guidebook which facilitates sharing and incorporation of best practice across all US states, whilst the Netherlands has a platform for organising meetings and conferences to share best practice learnings – Innovation portals, dedicated ‘champions’ of innovation and employee polling are all methods used by other operators to maximise innovation
<p>Conclusions and potential areas of opportunity</p>	<ul style="list-style-type: none"> • Potential opportunities exist to improve the gathering and incorporation of roadworks specific learnings: <ul style="list-style-type: none"> 9 Introduce formalised processes for capturing and incorporating best practice and feedback within HE 10 Create formal mechanisms for gathering feedback from external participants and for seeking out best practice within other relevant sectors (e.g. rail) 7 (As per prev. section) Develop formalised, roadworks-specific performance tracking KPIs used to track and learn from performance across all roadworks projects 11 Continue to drive improvements in innovation (e.g. by creating innovation champions)





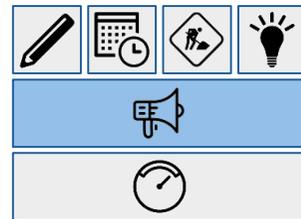
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End to end roadworks delivery: Stage 5 – Communications [1/2]

	Key findings
Considerations	<ul style="list-style-type: none"> The communications plan should consider the anticipated scale and impact of the roadworks, relevant stakeholders to engage, appropriate communications channels and required messages
Current practices and rationale	<ul style="list-style-type: none"> Roadworks communications differ dependent upon whether they are directed at stakeholders (e.g. contractors, local authorities) or at road users (both ‘public’ and ‘business’ road users) <ul style="list-style-type: none"> Stakeholders: Communications typically centre around planned TM, timescales and likely impacts in order to promote engagement with, and feed back into, the project plans. This occurs through a number of channels, including a degree of face to face meetings and events. HE’s communications team takes an active role in major projects stakeholder liaison and has a more ‘hands-off’ approach to operations stakeholder communications Road users: Road user communications are intended to give road users the opportunity to plan around future disruption. HE uses a range of channels (including digital, print and roadside) to communicate these messages. It also engages directly with business users by issuing weekly bulletin emails HE has its own communications team to ensure consistency across regional areas and maintain oversight of communications for the entire SRN, covering both major projects and operations
Strengths	<ul style="list-style-type: none"> Views on HE’s communications around roadworks were mixed, though interviewees praised the HE communications team’s proactive involvement, particularly during the pre-construction phase of major projects



Both stakeholder and road user communication follow a set plan, with current approach appearing to work well for engagement with certain project delivery stakeholders, and HE’s communications team well regarded



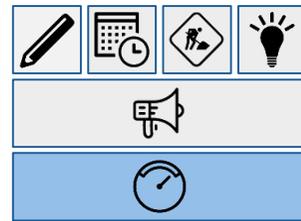
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End to end roadworks delivery: Stage 5 – Communications [2/2]

Key findings	
Areas for improvement	<ul style="list-style-type: none"> The key areas for improvement were focused upon communications to road users around the reliability and content of the information provided <ul style="list-style-type: none"> – Lack of trust in communications to road users: Some road users noted issues with the reliability of communications, with outdated, inaccurate communications being issued, which led them to lose trust in the information provided by HE – Articulating reasons for, and benefits of, roadworks: In addition to communicating the basics of what and when, there appears to be room for HE to improve its messaging of the reasons for and the benefits of roadworks schemes. Articulating the reasons for lengthy stretches of roadworks was seen as particularly important Interviewees expressed varying views on communication with local authority and utilities stakeholders, with some viewing it as effective whilst others highlighting it as an area for improvement (links to scheduling phase)
External learnings	<ul style="list-style-type: none"> Research into external road and infrastructure operators highlights a number of learnings from the Netherlands and from Network Rail around communicating with road users: <ul style="list-style-type: none"> – The Netherlands’ Minder Hinder model has ‘Effective Customer Communication’ as one of its core pillars, and it places emphasis not only upon conveying the facts around the scheme but also articulating the rationale for what is going on within the roadworks and what the outcomes will be, in order to increase user tolerance <ul style="list-style-type: none"> – Its Spitsmijden programme uses particular incentives to proactively drive positive change in road user behaviour around roadworks – Network Rail has done significant work to reduce demand for travel during periods of disruption, focused around forward visibility and proactive changes in behaviour, although it is not clear how transferrable such an approach would be to longer programmes of work favoured by HE



Conclusions and potential areas of opportunity	<ul style="list-style-type: none"> A number of potential opportunities exist to improve road user communications: <ul style="list-style-type: none"> 12 Improve reliability of communications, particularly for business road users, with a clear focus on rebuilding stakeholder trust 13 Increase the emphasis upon communicating the rationale and positive outcome of roadworks, in addition to basic facts 14 Develop ways of proactively changing road user behaviours, encouraging trip avoidance or rescheduling through a combination of messaging and incentives 15 Improve consistency of communication with local authorities and utilities
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Executive Summary

Stage 6 – Overall contractor performance management [1/1]

HE performance management process overview

Process	Description	Type of works	Contractor performance areas evaluated		Performance management of contractors	Strengths	Weaknesses
			Overall	Roadworks-specific			
KPIs and benchmarking	<ul style="list-style-type: none"> HE measures a broad range of KPIs: Network KPIs are used to compare high-level contractor performance between areas¹ Primary performance indicators (PIs) track how efficiently a contractor minimises delays to road users in an operational area Secondary PIs track how accurately roadworks are entered into SRW, and whether this is done in real-time 	<ul style="list-style-type: none"> Operations 	<ul style="list-style-type: none"> HE monitors a wide range of contractor KPIs 	<ul style="list-style-type: none"> Some KPIs are related to roadworks performance (e.g. monthly total delay metrics, compliance to NOM² real-time logging requirements and accuracy of NOM logging entries) Delays in roadworks KPI will be benchmarked (once introduced) 	<ul style="list-style-type: none"> PI performance and benchmarked network KPIs for areas are used by HE within contracts (e.g. financial penalties) and in assessing contractors on future contract opportunities 	<ul style="list-style-type: none"> Overall Area benchmarking KPIs allows contractors to be compared to peers, driving supply chain efficiency 	<ul style="list-style-type: none"> KPIs tend to track overall trends rather than specific events, making it difficult to identify specific learning points
Stage gate review	<ul style="list-style-type: none"> Stage gate reviews track completion of project objectives (and any deviation from these) 	<ul style="list-style-type: none"> Major projects 	<ul style="list-style-type: none"> Project progress (key objectives met), overall performance vs. timeline and budget 	<ul style="list-style-type: none"> Activity levels (Roadworks delivery and communication) Roadworks safety 	<ul style="list-style-type: none"> If stage gates are not passed, contractors may be required to burden the financial risk of the delay 	<ul style="list-style-type: none"> Established project control processes and oversight by HE project managers and sponsors (using stage gate reviews) 	<ul style="list-style-type: none"> Lack of performance management directly related to meeting roadworks objectives
Lessons Learned	<ul style="list-style-type: none"> Lessons learned processes are run following the completion of major projects to identify how contractors (and HE) can improve on future projects 	<ul style="list-style-type: none"> Major projects 	<ul style="list-style-type: none"> Key issues faced during project 		<ul style="list-style-type: none"> HE mandates 'lessons learned' inputs for major projects, improving the overall quality of future projects 		
POPEs	<ul style="list-style-type: none"> Post Opening Project Evaluations (POPEs) review schemes 1 and 5 years after a project is completed, to assess the success and impact of a scheme 	<ul style="list-style-type: none"> Major projects 	<ul style="list-style-type: none"> Financial performance Completion to timeframe Key issues faced 	<ul style="list-style-type: none"> Limited 			



Conclusions and potential areas of opportunity	<ul style="list-style-type: none"> There is an opportunity to develop a roadworks focused performance management process, which would include traffic flow KPIs, customer satisfaction measures and other metrics aligned to HE's objectives and gathered for specific roadwork events <ul style="list-style-type: none"> Note this is linked to opportunity No. 7 (mentioned in ongoing works management) to develop formalised, roadworks-specific operations performance tracking to measure actual performance vs. planned objectives and could potentially be incorporated into HE's current broader performance management mechanisms
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Executive Summary; Synthesising the findings and conclusions across the various stages points to six key themes with 15 potential areas of opportunity for HE to consider

Key theme	Design	Scheduling	Ongoing Works Mgt.	Continuous Imp't	Communications	Performance Mgt.	
Customer experience: Increase prioritisation of customer experience; longer term seek to develop a more holistic approach to customer journeys and proactively change road user behaviour	1	Ensure customer experience is prioritised and communicated appropriately					
	2	Review guidelines around length and spacing regulations, and acceptable delays					
	5	Develop a more agile and holistic approach to traffic management focused around users' end-to-end journeys and the broader impact roadworks have upon the economy					
	14	Develop ways of proactively changing road user behaviours, encouraging trip avoidance or rescheduling through a combination of messaging and incentives					
Road user communications: Linked to the above, increase quality of communications to road user		12	Improve reliability of communications, particularly for business road users, with a clear focus on rebuilding stakeholder trust				
	13	Communicate the rationale and positive outcome of roadworks, in addition to basic facts					
Performance management: Increase alignment of performance management with roadworks objectives (particularly customer experience); longer term development use of roadworks specific KPIs and 'big data' technology			6	Review contractor incentives/penalties for scheme overruns (and other KPIs)			
			8	Increase use of emerging technology and 'big data' to improve tracking of traffic management			
	7	Develop formalised, roadworks-specific KPIs to measure actual performance vs. planned objectives and to track and learn from performance across projects					
Stakeholder communication and collaboration: Enhance broader stakeholder engagement, particularly with LAs and utilities (Note: This is also dependent on stakeholder willingness to engage with HE)		4a	Introduction of NOMS should increase visibility of works				
	4b	Explore opportunities to take this further (e.g. increased collaboration and/ or a single roadworks scheduling systems)					
	15	Improve consistency of communication with LAs and with utilities					
Continuous improvement: Continue to develop and invest in continuous improvement	9	Introduce formalised processes for capturing and incorporating best practice and feedback within HE across all stages					
	10	Create formal mechanism for gathering feedback from external participants and for seeking out best practice within other relevant sectors					
	11	Drive innovation					
Process resilience: Shift to more process-driven operations planning	3	De-risk and build in process around operations roadworks design					

Agenda

- Executive summary
- **Appendix**
 - **Interview lists, secondary sources, glossary**

Methodology; Credo has drawn upon a number of primary and secondary sources of information in order to come to a view on HE performance and external best practice

- HE representatives, contractors, UK highways industry experts, and road user representatives were interviewed to obtain a broad set of perspectives on current roadworks processes and Highways England’s performance
 - Responses were collated, and HE strengths and areas for improvement were identified
- Additionally, Credo contacted a number of other road operators within the UK and globally to discuss external best practice and innovation
- Secondary research was used to complement and expand on primary research findings
 - A full list of sources, along with the methodology for international operator selection can be found later in the appendix

Interviewee group	Purpose	Number of interviewees
Project stakeholders	• Overview of HE’s as-is processes and current developments	15
Contractors	• Gather HE performance feedback • Identify contractor best practice examples	15
Road user groups	• Capture road user perspectives regarding HE performance	5
Experts	• Understand industry processes and best practice	2
International external operators	• Identify international best practice examples	19
Domestic external operators	• Gather HE performance feedback • Identify external operator (e.g. LAs, utilities companies, DBFOs) best practice examples	16
Total		72

Glossary

Acronym	Description
AFB	ASFiNAG-Fahrer-Blick
ASCs	Asset Support Contracts
ASFiNAG	Autobahnen- und Schnellstraßen-Finanzierungs-Aktiengesellschaft
CDF	Collaborative Delivery Framework
CEDR	Conference of European Road Directors
CIHT	Chartered Institution of Highways and Transportation
CLIC	Collaboration Lean Improvement Coordinator
DBFO	Design, Build, Finance and Operate
DfT	Department for Transport
DVLA	Driver and Vehicle Licensing Agency
ETON	Electronic Transfer of Notices
FEHRL	Forum of European National Highways Laboratories
FTA	Freight Transport Association
HE	Highways England
JAG	Joint Authorities Group
JV	Joint Venture
KCC	Kent County Council
KPIs	Key Performance Indicators
LAs	Local Authorities
LoPS	London Permit Scheme
MACs	Managing Agent Contracts
NOMS	Network Occupancy Management System
NOC	National Operations Centre (Network Rail)

Acronym	Description
NRA	National Road Administration (Flanders)
NRUSS	National Road Users' Satisfaction Survey
NTIS	National Traffic Information Service
ORR	Office of Rail and Road
PIARC	World Road Association
POPE	Post Opening Project Evaluation
PRA	Provincial Road Administration (Flanders)
QUADRO	Queueing and Delays at Roadworks
RIS	Road Investment Strategy
RIUs	Regional Intelligence Units
SRN	Strategic Roads Network
SRUS	Strategic Roads User Survey
SRW	Schedule of Road Works
TAME	Traffic Appraisal Modelling and Economics
TfL	Transport for London
TIA	Traffic Impact Assessment
TLRS	Transport for London Lane Rental Scheme
TM	Traffic Management
TMAN	Traffic Management Act Notification
TRB	Transport Research Bureau
TTRO	Temporary Traffic Regulation Order
TUBA	Transport User Benefit Analysis
VMS	Variable Messaging Signs
WoW	Wegbeheerders Ontmoeten Wegbeheerders

Secondary sources; **We also evaluated various Highways England and external secondary research data sources to supplement our analysis**

Highways England sources

Source
Highways England Performance Monitoring Statements, 2015-2016
Highways England Accident Frequency Rate Data
Highways England Annual Reports
Highways England Customer Focused Roadworks Guide and Checklist
Highways England Delivery Plan, 2015-2020
Highways England Innovation, Technology and Research Strategy Document, 2016
Highways England Knowledge Compendium
Highways England Network Maintenance Manual
Highways England Technical Appraisal Report, 2016
Highways England 'The Project Control Framework' Handbook, 2013
Highways England 'The Strategic Deployment of Lean Construction' Presentation, 2015

External sources

Source
Arcadis 'Learning from the Dutch: Improving Customer Experience During Roadworks' Presentation
ASFiNAG Annual Report, 2015
ASFiNAG Road Works and Construction Site Management Report
Benchmarking Highways England's Performance' Progress Report, 2016

External sources (cont'd)

Source
CIHT Awards, 2016
GovHK website
House of Commons TTRO Note, 2014
Kier/Area 9 Traffic Management Procedure
New Roads and Street Works Act, 1991
NRUSS Annual Report, 2015-2016
Rijkwaterstaat Annual Report, 2016
Rijkwaterstaat Data
Road Investment Strategy Reports
'Scoping Study To Define A Major Research Project Investigating The Implementation Of Last Planner System, Collaborative Planning And Collaborative Working In The UK Road Transport Sector Including Identifying Funding Sources' Final Report, 2015
The Trunk Road Network in Denmark, 2013
Traffic Signs Manual, Chapter 8
Transport Network Articles
Transport Systems Catapult 'Reducing the Impact of Roadworks on the SRN' Project Report
U.S. Department of Transportation Federal Highway Administration 'Work Zone Operations Best Practices Guidebook (Third Edition), 2013
US Department of Transportation website
Wegbeheerders Ontmoeten Wegbeheerders Platform

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