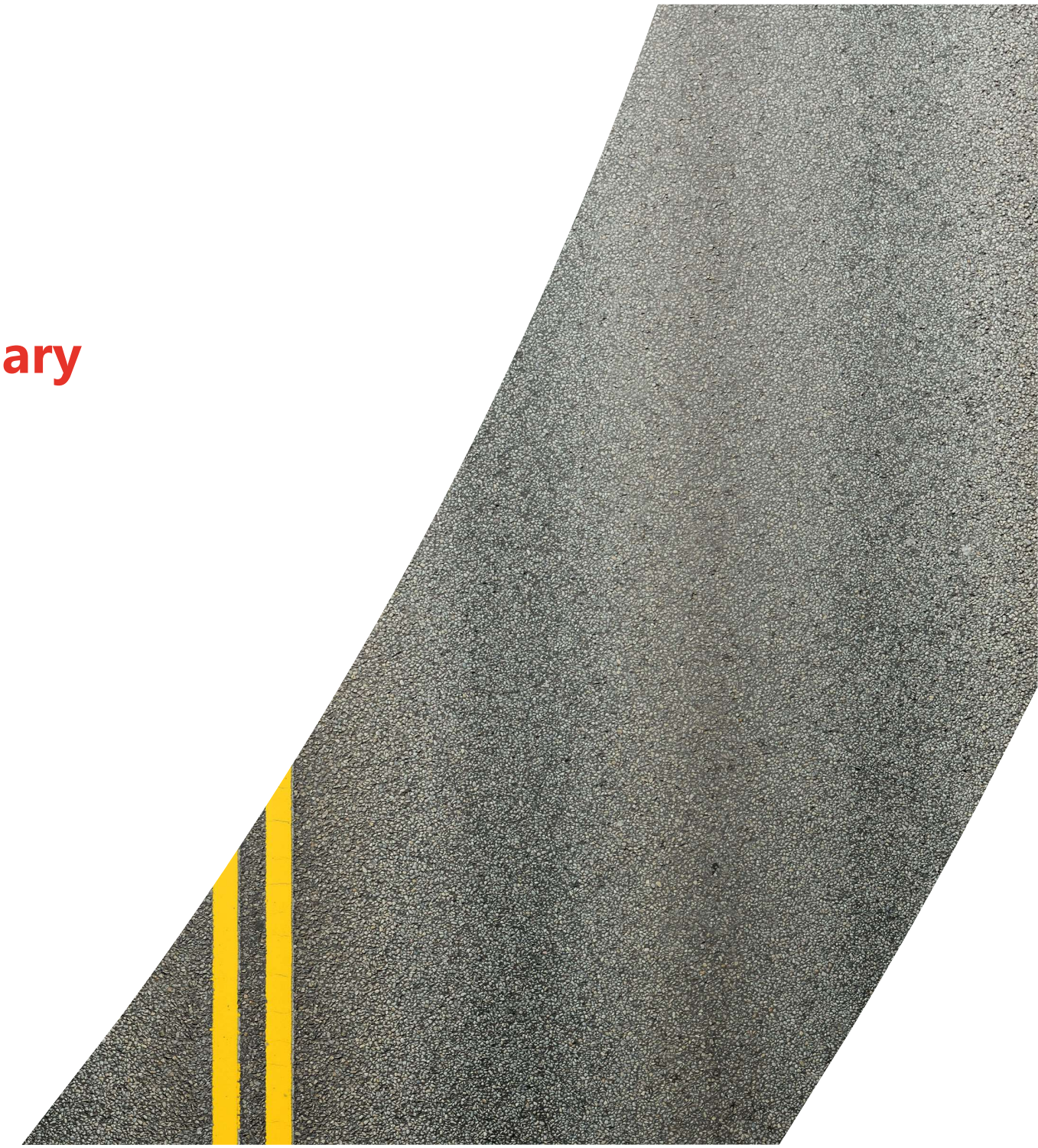
Review of the effectiveness of Highways England's efficiency measurement framework

Final Report for ORR – 15 April 2020

ABBEL

Table of Contents

Executive Summary



Roads reform created Highways England to improve customer service and deliver significant improvements in efficiency

HE was created with ambitious objectives and a number of governance checks and balances

HE was created as part of the far-reaching roads reform designed to address declining road performance caused by under-investment coupled with significantly growing demand.

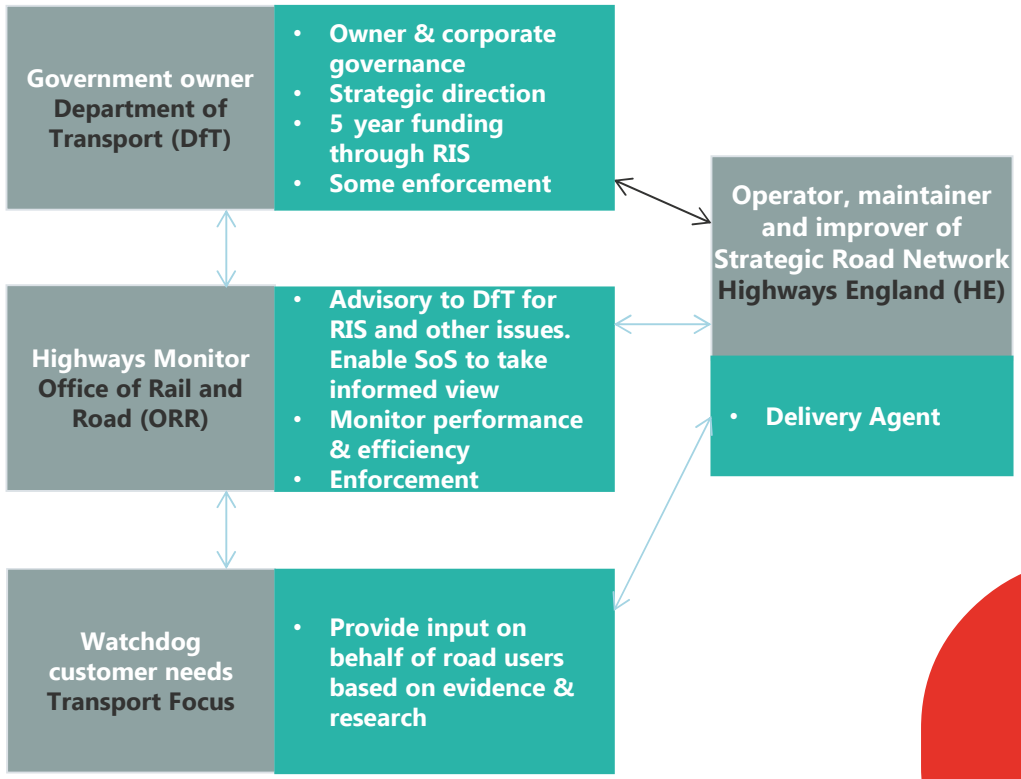
The new arrangements provide for sustainable funding over five-year Road Periods with clear guidance around the outputs to be delivered.

The industry structure is intended to:

- preserve the public service nature of delivering road assets;
- maintain the link with Government policy and strategic objectives; yet
- provide for rigorous independent scrutiny on behalf of tax-payers, road-users and other stakeholders.

The arrangements are also designed to facilitate transparency in order to meet these objectives.

New industry & governance structure
As created in 2015



While measuring efficiency is inherently difficult, well-targeted measurement pays long-term dividends in assisting efficient delivery

Efficiency measurement is challenging:

What is the frame of reference:

- Long-term costs are nice but practically difficult
- Is it a whole-life cost approach or cost of specific tasks?

Measuring out-turn costs:

- Comparable data over time? From robust system?
- Data at right level?
- Are the drivers of cost-outturn completely understood?
- How are whole life costs measured?

Measuring forecast / baseline costs:

- Is the forecast rigorous and stretching?
- Was the forecast produced at an appropriate point?

Understanding the agreed output:

- Has the output changed inadvertently?
- Is there no backlog created?
- Was there agreed scope changes taken into account?
- What was the initial view of the relationship between outputs and outcomes? Has this relationship been affected via project delivery?

Despite the challenges, efficiency measurement is critical because it:

- **Promotes internal stretch (a priority)**
- **Supports continuous improvement in terms of efficiency targets and RIS development**
- **Allows ORR to discharge its statutory duties as Monitor**

These principles can be used to evaluate progress to-date and guide future development

ORR has asked Rebel to review:

- **Progress to-date in RP1**
- **Plans for RP2**
- **Suggestions for any additional improvement**

There has been good progress in RP1, and plans have been refined for RP2. Remaining gaps reflect the early stage of development, but should be chased

The lack of a detailed baseline for RIS1 – beyond the control of HE – has been a major constraint in measuring efficiency. HE has addressed this and developed a number of insights from its unit cost models that have been customised for the specific features of the capital programmes, as well as detailed case-study analysis that identifies when to recognise efficiency, and some of the key adjustments to be made. The processes are well embedded into the company and have excellent senior involvement in governance arrangements.

The RP2 proposals improve the baseline position and refine the collection of evidence. We consider that it would be worthwhile making further developments in terms of the breadth of evidence being collected, as well as better linking measurement to the drivers of efficient outcomes. This will allow better quality conversations, better alignment with the key reasons for measuring efficiency, and enhance the continuous improvement process.

Promoting internal stretch

Continuous improvement

Discharge of ORR Monitor duties

Gaps / opportunities

- External comparator analysis to test the art of the possible and provide stretch
- Explicitly link the nature of efficiency initiatives to what is measured
- Related, understand how improving organisational competencies will drive long-term efficiency
- Understanding cost-drivers in more detail, including continuing to develop unit costs at a more detailed activity level
- Robust baseline
- Proactive identification of interim milestones in efficiency measurement
- Capture and utilise a wider range of measures to counter the inherent complexity, and to foster better quality dialogue

We have identified a number of suggestions that address the gaps, will provide a richer evidence base, and assist HE's efficiency journey

1. Improved baseline

- As far as practicable the baseline for each capital scheme has to comprehensively identify the scope, the expected inputs, the basis of the delivery approach, and the treatment of risk. The plans for RIS2 significantly improve the approach vs RP1. Other consultancy reviews are also addressing how to define scope and will be incorporated into the HE approach as appropriate
- Clearly it is not possible to definitively identify all aspects of all schemes across the Road Period. In keeping with its EIMM process for RP2, HE should update estimates over time, and clearly indicate how the risk pot is being treated in relation to efficiency measurement

2. Identify and report against milestones for the evolution of HE capabilities

- HE should develop an initial draft of its own view of a 'Development Plan' covering RP2 and RP3 (ideally) by end of September 2020. Our own view of what this might look like is provided in subsequent slides.
- HE should also develop SMART interim milestones for RP2 against each of the core components – on a say 6 monthly basis, and report progress against these to the ORR. We do not suggest or expect that these milestones would be regulatory targets. It is intended to be additional information to be taken into account in assessing progress, as well as forming future plans based on learnings over time
- The existence of such a plan and associated milestones provides three key benefits
    - A different source of information about whether efficiency is being delivered. While not regulatory targets, meeting agreed milestones about evolving capabilities can help demonstrate that efficient practices are being put in place
    - Identifying how efficiencies will be delivered assists in cross-tabulating outcomes across different efficiency measures (for example the efficiency levers set out in the HE Efficiency Delivery Plan)
    - Related, progress with milestones and initiatives – some of which will inevitably work better than expected, and others less well – helps with the continuous improvement cycle

We have identified a number of suggestions that address the gaps, will provide a richer evidence base, and assist HE's efficiency journey (2)

3. Continue case-study assessment and provide more detail on a targeted range of cases

- The detailed assessment of what efficiency opportunities have been achieved, and the size of those efficiencies is a key piece of evidence to support the KPI achievement
- We suggest that a greater level of detail is provided about a small number of representative case-studies in order to help the ORR fulfil its Monitor duties, without increasing the regulatory burden. This complements but does not replace the need for internal HE assurance processes.
- The sample would need to cover the different categories of efficiency initiatives, and while focusing on areas of bigger spend, also provide some insight into the range of initiatives. This would also be in line with the intended move in RP2 to more thematic case-studies
- To support continuous improvement and reconciliation of different efficiency measures, the analyses should tabulate efficiencies according to the efficiency initiatives being proposed by HE (which could also be categorised within the system of economy, productivity and effectiveness)

4. Continue to develop unit cost measures so that they are ultimately at an activity level which should be chosen to reflect key project cost drivers

- This is a critical part of long-term cost-intelligence and efficiency insights and will contribute to a better understanding of cost-drivers
- However this is a long-term endeavour likely to take 5-10+ years to bring to full maturity. As set out in a subsequent slide, appropriate prioritisation could lead to some additional data within 2 years
- In the first instance, HE should develop a plan of how it will develop its capability in this area and the likely outputs to be realised within RP2. We suggest this plan is developed by end September 2020
- A plan should usefully incorporate trials of econometric / statistical approaches to total cost estimation to gauge benefit in terms of cost drivers. It is understood that this is already underway at HE
- It should also link to external comparator / benchmarking analysis which can provide insight into the choice and size of activity measures
- Finally, HE should identify productivity measures (initial suggestions below) to complement unit cost assessment though these should be supporting evidence rather than regulatory targets

We have identified a number of suggestions that address the gaps, will provide a richer evidence base, and assist HE's efficiency journey (3)

5. Comparator analysis to assist with best-practice identification

- Comparator analysis is difficult – but if done in the right way provides insight about the art of the possible and where HE is currently at best practice or where there may be opportunities to consider. Even identifying that there are no helpful comparators or nothing to learn is a useful outcome
- We suggest that HE develop specific plans for best practice identification, building on plans / discussions that have already taken place, and complementing the regional approach. This will bridge the gap between the qualitative and quantitative measures, and give a measure of the HE stretch. The greatest initial opportunity is in a bottom-up analysis drawing on exchange of best-practice, rather than a top-down statistical exercise
- We would suggest that the plans cover:
  - Approach / methodology in the next 6-12 months, though we suggest this would commence with a relatively small and focused number of comparators, and a small number of points of comparison. Initially there is also likely to be reliance on professional judgement and insight to support the analysis. It will take many years to develop a sufficient time-series and comparators with robust and meaningful data sets that can be used for statistical / econometric analysis
  - Engage comparators and first information exchange in the first half of RP2
  - Commitment to this referenced in EIMM and/or reflected in future updates

6. Process for overall assessment

- We suggest that this process continues to be led by HE and that HE provides, on a quarterly basis, an estimate of how it is tracking against the end of RP KPI, as well as latest available supporting evidence including progress against development milestones. The intent is that the annual efficiency report produced by HE should not contain any surprises – anything going better or worse than expected should have been flagged at one of the quarterly meetings. In turn, the annual process should lead to no surprises in the ultimate end of RP assessment against the efficiency KPI.

Context & overview

Highways England (HE) was created on 1 April 2015 to deliver greater economic value of the Strategic Road Network (SRN), and at the same time reduce costs

Background to the creation of HE

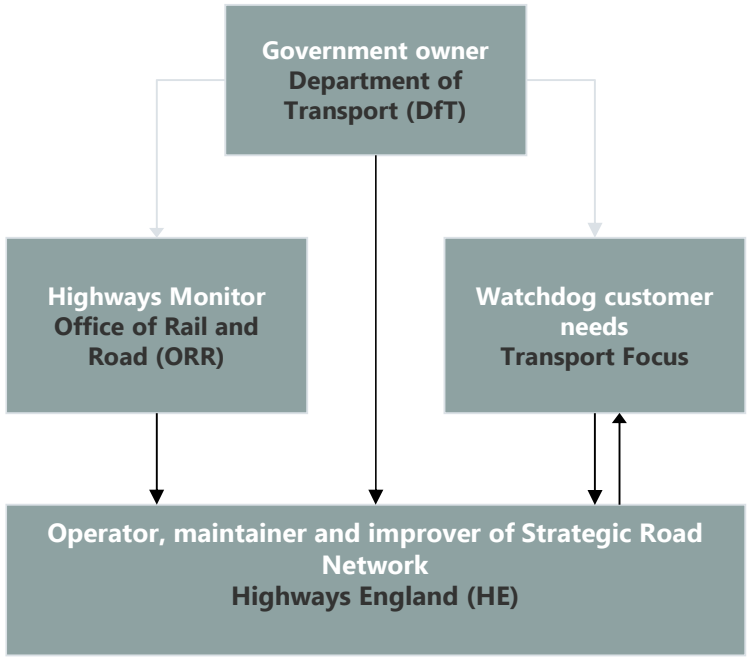
The main reasons to create Highways England were to increase customer service and efficiency by:

- Enhance the economic value of the Strategic Road Network (SRN) through a more strategic outlook
- Provide greater certainty and flexibility of funding, and stability over delivery requirements,
- Improve accountability and transparency for road users and taxpayers

The most important changes:

- Transform the Highways Agency to a government-owned strategic highways company
- Creation of an effective system of governance
- Establishment of a 'road investment strategy' setting out what he company must achieve over a 5 year period, with associated funding
- New roles for Transport Focus and the Office of Rail & Road (ORR) to represent the interests of road users and monitor the company's performance

New industry & governance structure
As created in 2015



Source: https://www.gov.uk/government/consultations/transforming-the-highways-agency-into-a-government-owned-company

The Highways Monitor role is unique in comparison to other sectors – primarily as independent assurance and advisory to the Secretary of State

ORR STRATEGIC OBJECTIVE

4. Secure improved performance and value for money from the strategic road network

Secure improved performance, including efficiency, safety and sustainability, from the strategic road network, for the benefit of road users and the public, through proportionate, risk based monitoring, increased transparency, enforcement and robust advice on future performance requirements.

EXTRACT FROM MOU (SoS & ORR)

Monitoring and benchmarking [2,3,4,5]

2.8. The Monitor will be responsible for assessing the Company's performance and efficiency in the areas of:

a. Delivery against the RIS, including the performance specification and the investment plan (taking into account any standalone protocol agreements where they have a significant impact)

b. The Company's financial performance; and

c. Any additional measures which either the Monitor or Secretary of State have determined need to be taken into account.

2.9. The Secretary of State will expect the Company to provide all information necessary to make this assessment including financial and operational information, noting the Monitor's right to data under the Act. Both the Company and Monitor should work closely to ensure that reporting is timely and can support the Secretary of State in making decisions about the Company.

The role of ORR

ORR has been very explicitly, and deliberately, given a role as 'Monitor' rather than 'Regulator'. This fits with the nature of Highways England as a wholly owned company of the Government. The Monitor role focuses on performance and efficiency (though clearly this needs to be in the service of better results for users), and is an independent check and challenge free of any political interference. This should enable the Secretary of State to fully understand performance, and to inform the development of future Road Investment Strategies.

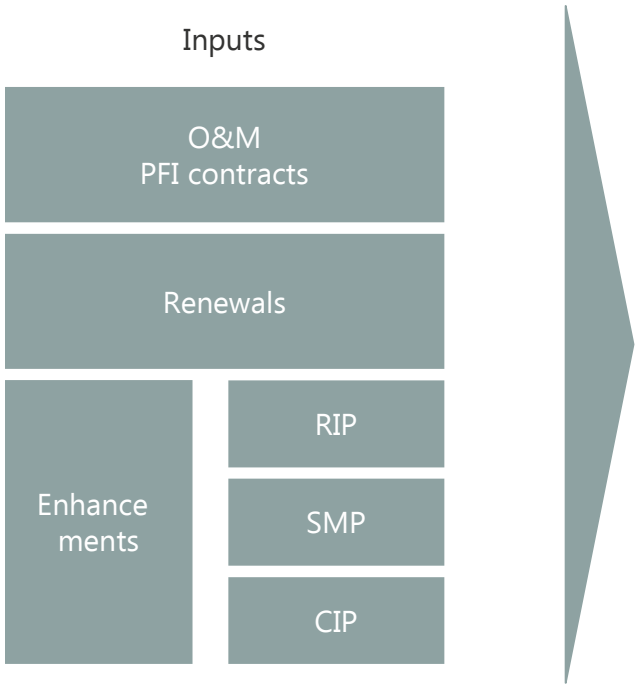
The efficiency monitoring framework is an important tool that ORR will use in discharging the important statutory duties it is assigned.

It is noted that while ORR is Monitor rather than Regulator, it retains a number of strong powers – including ultimate enforcement and information gathering. Though the MOU makes clear that HE is expected to provide information transparently in any event.

Committed funding over each 5 year Road Period requires HE to deliver specific capital schemes and KPIs across eight outcome areas

Key commitments of HE in RIS1

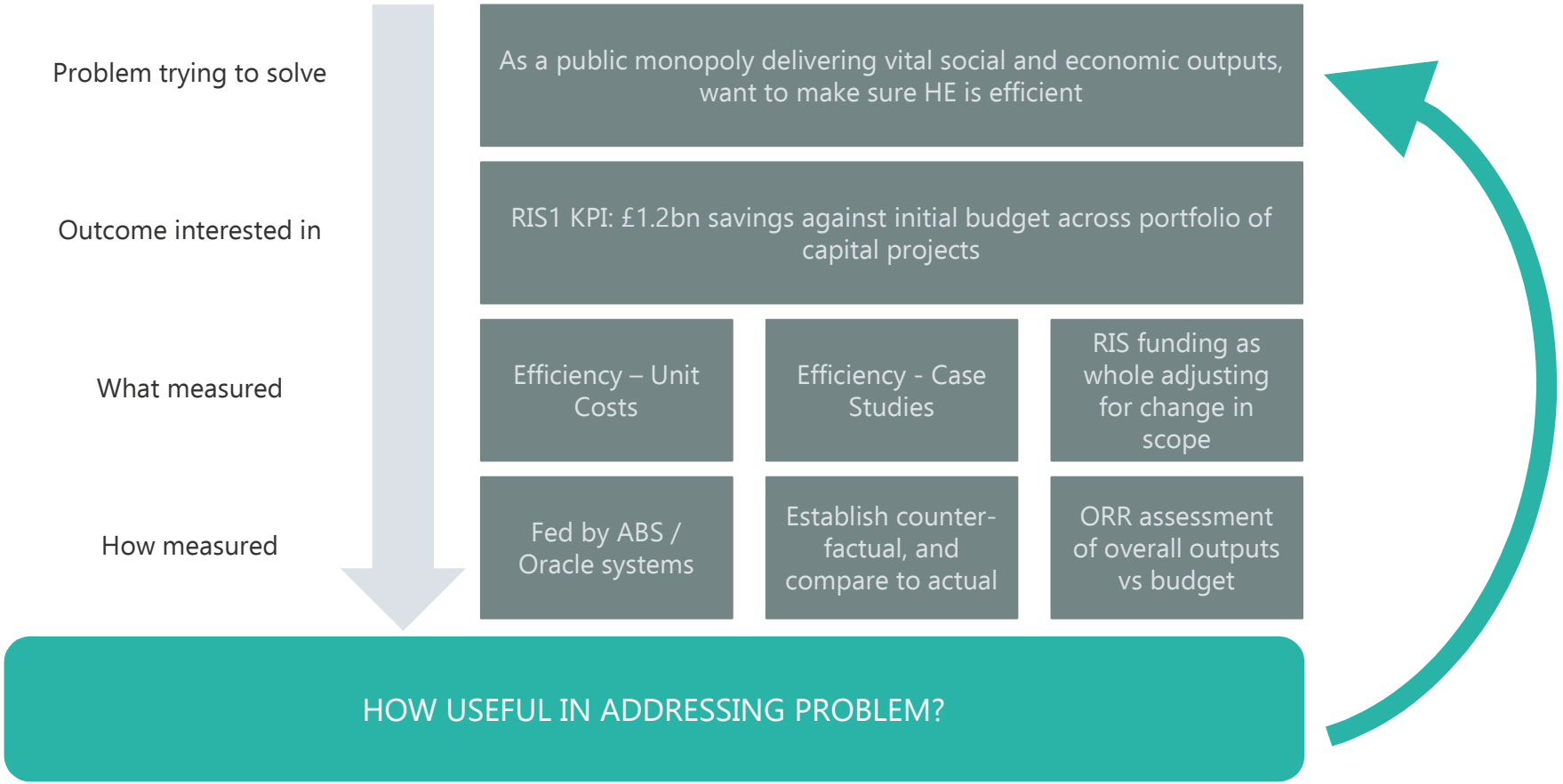
A combination of specific categories of schemes (inputs) and overall KPI measures (outcomes / outputs)



Outcome areas	KPI
1) Making the network safer	• The number of KSIs on the SRN
2) Improving user satisfaction	• The % of NRUSS respondents who are Very or Fairly Satisfied
3) Supporting the smooth flow of traffic	• Network Availability: % of the SRN available to traffic. • Incident Management: % of the motorway incidents cleared within 1 hour
4) Encouraging economic growth	• Average Delay (time lost per vehicle)
5) Delivery better environment outcomes	• Noise: Number of Noise Important Areas mitigated • Biodiversity: Delivery of improved biodiversity, as set out in the Company's Biodiversity Action Plan
6) Helping Cyclists, walkers, and other vulnerable users	• The number of new and upgraded crossings
7) Achieving real efficiency	• Cost Savings: Savings on capital expenditure • Delivery Plan progress: Progress of work, relative to forecasts set out in the Delivery Plan
8) Keeping the Network in good condition	• % of pavement asset that does not require further investigation for possible maintenance

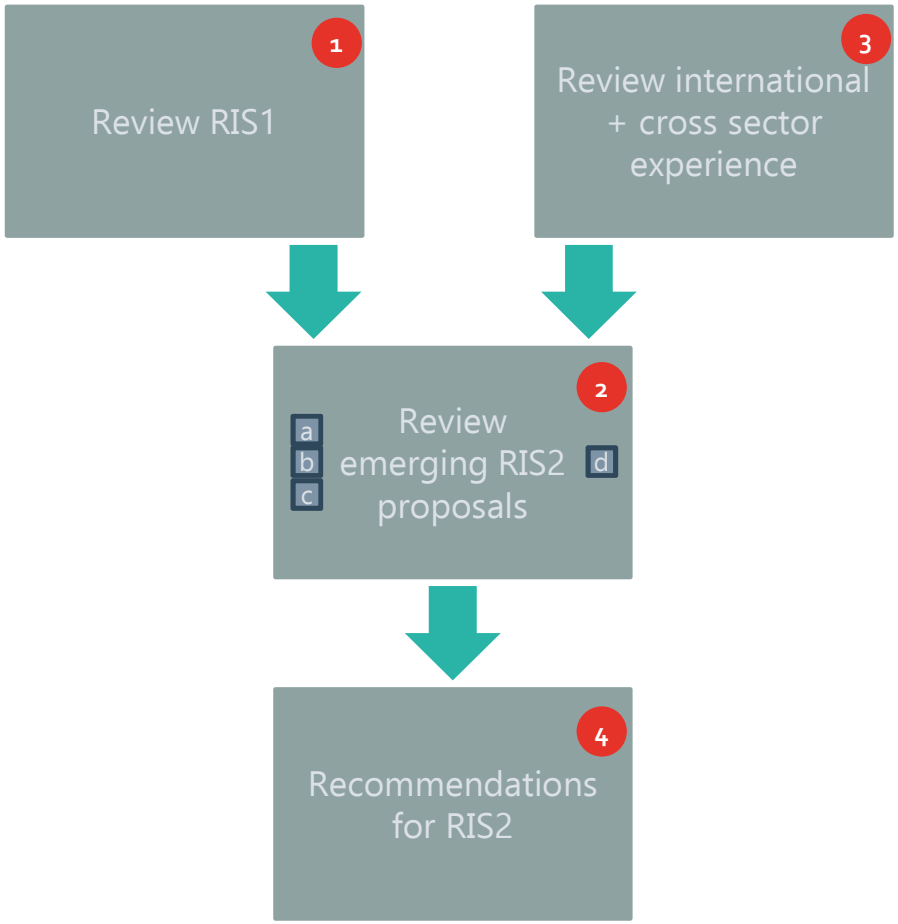
Efficiency is key to the purpose of creating HE, and ORR must evaluate complex evidence to assess whether the efficiency KPI target is being met

Schematic representation of the current efficiency measurement framework
Highlights the efforts undertaken to address the overall challenge



ORR commissioned Rebel to review progress to-date, understand lessons from other sectors, and recommend improvements for RP2 and beyond

Methodology for this study
As proposed by Rebel



Explanation of the methodology

The methodology consists of four different steps:

1. Review RIS1
2. Review emerging RIS2 proposals
3. Review international + cross sector experience
4. Recommendations for RP2

In step 1 the current efficiency framework is analysed at the same time a review of other efficiency frameworks will give an indication of what 'good' looks like. We then identify any gaps and develop proposals about how to best close those gaps in a sustainable time-period. Particular focus is improvements that can take place within RP2.

Significant work has already been undertaken by ORR and HE prior to engaging Rebel. We are mindful that our advice needs to build on that work in order to avoid wasted effort, while still be willing to critically evaluate and review to achieve long-term benefit.

In-line with our methodology, the remainder of this report documents the analysis we have undertaken and best-practice suggestions for RP2 and beyond

The main steps of our methodology
Purpose and detail of each step

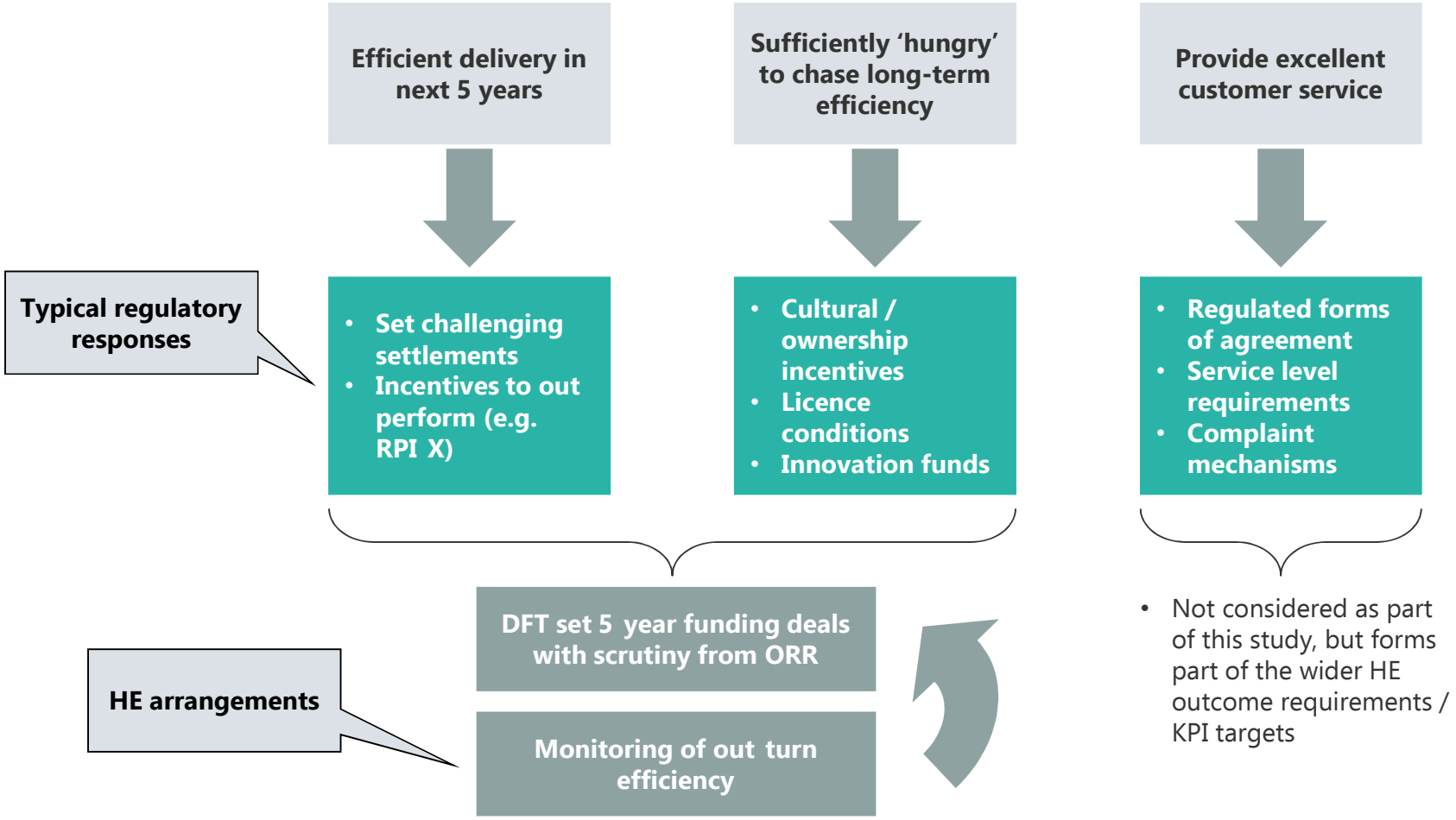
Basis & purpose of efficiency measurement	What does 'good' look like?	Review of HE progress to date	Gap analysis	Proposals to evolve the measurement framework
Purpose: Set a common understanding of what we are trying to achieve. Sets basis of defining 'good'.	**Purpose:** Vision for the future that HE can move towards	**Purpose:** Understand what HE has achieved and approach it has taken – both the measures used and approach to calculating	**Purpose:** Understand where HE sits against the long-term vision. Sets the basis for change	**Purpose:** What can HE usefully do over what timeframe
Key steps: • How efficiency used in regulation • Definition of efficiency • Challenges of measurement	**Key steps:** • High-level principles • Anatomy of efficient capital project • Case-study analysis from other sectors	**Key steps:** • Measures • Calculation • Governance & regulatory interaction	**Key steps:** • What HE does • Other activities HE could pursue	**Key steps:** • Linking maturity of HE to measurement framework • Implementation time-frames and resources • Next steps

The basis & purpose of efficiency measurement

Having created Highways England as a natural monopoly, the SoS wants confirmation that HE is driving efficiencies in the short- and long-term

Typical concerns with natural monopoly

Some of the standard responses and the HE approach

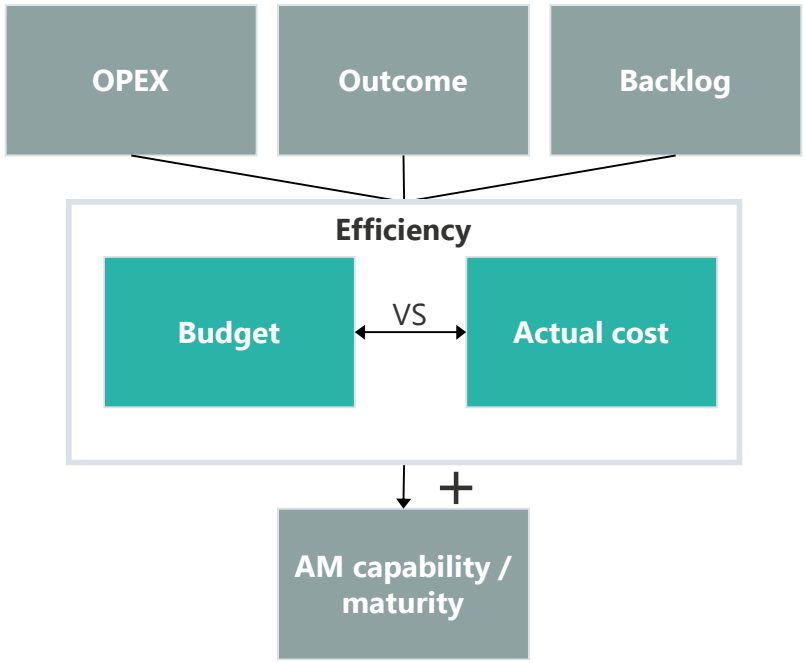


- Not considered as part of this study, but forms part of the wider HE outcome requirements / KPI targets

The concept of efficiency is about comparing outputs to inputs, but it is inherently difficult to do in an unambiguous way

The measure of efficiency compares the actual cost to budget

However, other factors like whether outputs are delivered or if there is growing backlog of activity need to be considered. In the long-term efficiency is impacted by asset management capability



Efficiency measurement is challenging:

What is the frame of reference:

- Long-term costs are nice but practically difficult
- Is it a whole-life cost approach or cost of specific tasks?

Measuring out-turn costs:

- Comparable data over time? From robust systems and processes?
- Data at right level?
- Are the drivers of cost-outturn completely understood?
- How are whole life costs measured?

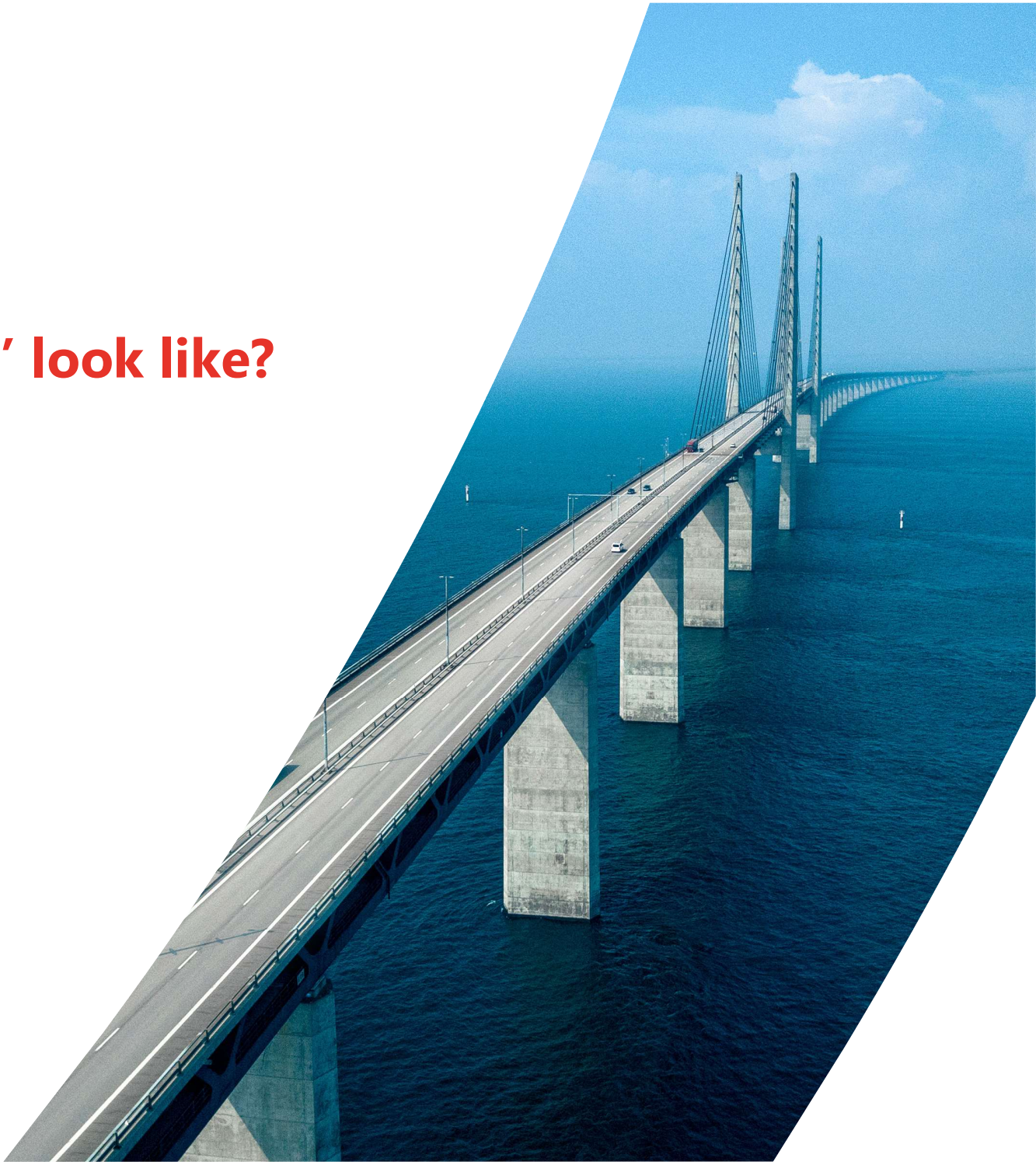
Measuring forecast / baseline costs:

- Is the forecast rigorous and stretching?
- Was the forecast produced at an appropriate point?

Understanding the agreed output:

- Has the output changed inadvertently?
- Has any backlog arisen?
- Were agreed scope changes taken into account?
- What was the initial view of the relationship between outputs and outcomes? Has this relationship been affected via project delivery?

What does ‘good’ look like?



The previous section highlighted the practical challenges in measuring efficiency – this section looks at the available range of evidence to define 'good' in practice

Range of evidence to be collated in defining 'good'

Different approaches that could inform best-practice outcomes for HE

Approach / evidence area	Insight	Challenges
Overarching principles	• Universal application • Can be prioritised according to HE requirements • Forms	• Is a set of criteria but of themselves do not suggest any particular approach – is a starting point • Shot term management – ensuring that efficiency does not result in higher whole life costs
Elements of an efficient capital project	• The various tasks needed to achieve the desired outputs • Suggests the areas / categories that need to be measured, if not the measures themselves	• Making sure that the approach is a good representation of the HE situation
Comparator studies	• Lessons learned from other sectors • Specific details about what has been measured, how long it has taken to implement, and the success of the approach • Range of tools used (including measuring efficiency) to drive efficient overall outcomes • Is there a relationship between the nature of the industry and the measurement approach taken?	• Applicability to the unique nature of HE • Suitability of implementation time-frame

It is helpful to set out the overarching principles for a good efficiency monitoring framework, but they are a starting point rather than definitive guide

We tested a number of principles in an early workshop with ORR & HE:

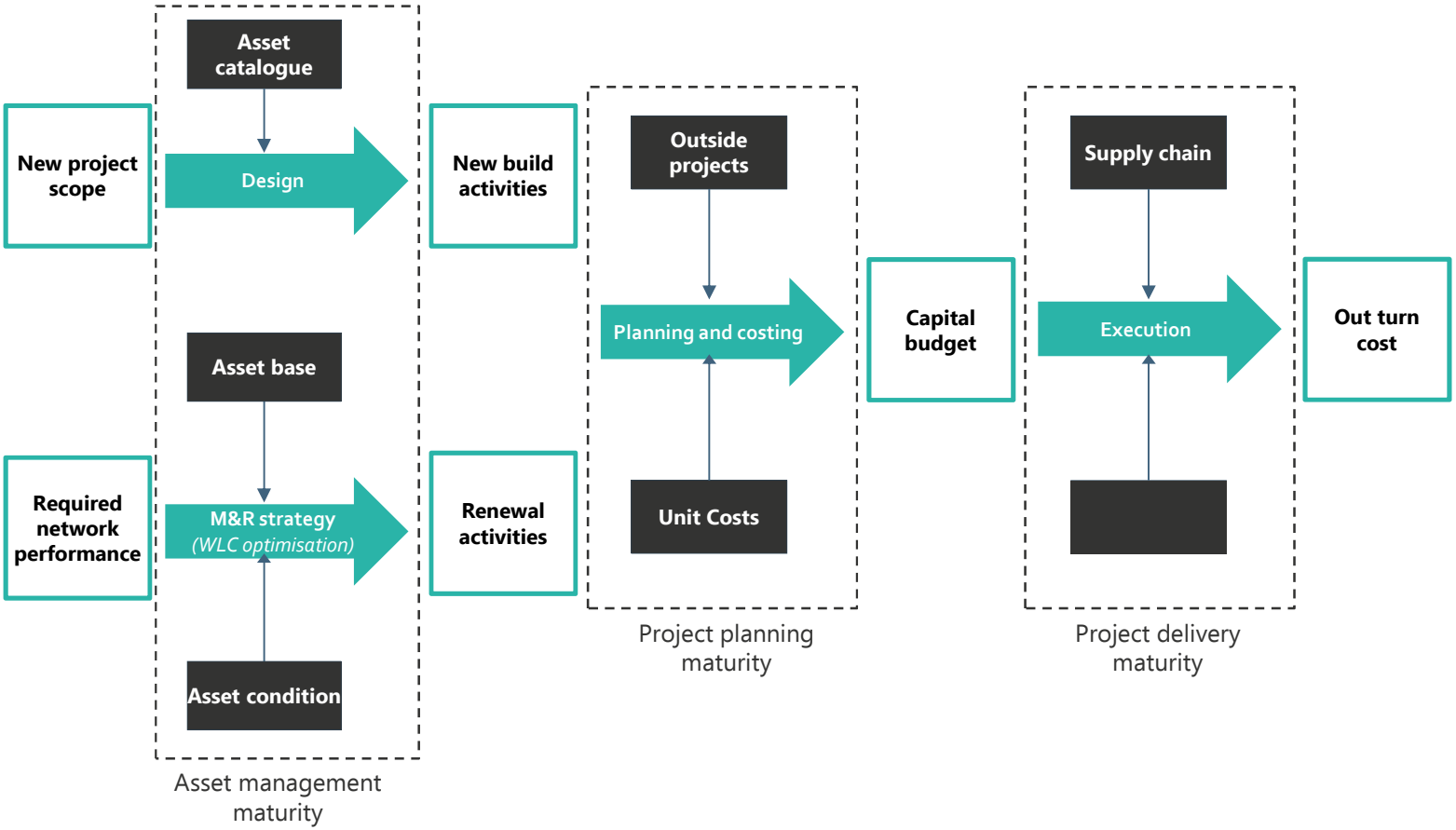
- Clear / visionary / resonates with the public
- Promotes good WLC decisions / sustainable use of the infrastructure
- Maintains incentive for 'stretch' over the whole regulatory period
- Clearly separates the good things that management does from changes beyond their control
- Is administratively simple / proportionate, to avoid endless messy arguments
- Keeps out-turn costs within available budget
- Provides helpful business information as part of continuous improvement cycle

Our conclusion is that the following principles summarise these considerations and can be used to evaluate progress to-date, as well as guide plans for the future:

- **Promotes internal stretch (a priority)**
- **Supports continuous improvement in terms of efficiency targets and RIS development**
- **Allows ORR to discharge its statutory duties as Monitor**

Understanding the components of an efficient capital project also provides insight about what can be helpfully measured

From requirement to realised cost
Most important elements that drive efficiency



Discussion

- Efficiency can be achieved in different steps between initial performance requirements and realised cost
- We have identified three major steps and these are linked to the maturity of the asset management, project planning and delivery functions
- Full insight into an organisation's efficiency should take this full set of elements into consideration

Not all options used to drive efficiency in comparator examples are available to ORR / DfT / HE – this needs to be recognised in identifying best practice

Levers that drive efficient company performance

Menu of options available to policy-makers & regulators to replicate competitive market

Structure		Conduct	
OWNERSHIP	❑ Private vs public	**EX-ANTE ALLOWANCE SETTING**	❑ Top-down benchmarking ❑ Bottom-up budgeting and efficiency initiatives ❑ Innovation funds ❑ Stretch targets / frontier shift
FUNDING	❑ Short-term vs long-term ❑ Sourced from public vs private	**EX-POST MONITORING**	❑ Check inputs / calculations ❑ Top-down assessments ❑ Wide-ranging licence conditions (purposive) ❑ Threats and enforcement ❑ Unit costs ❑ Productivity measures ❑ Balanced score-card ❑ Composite measures ❑ Wider proxies, e.g. asset management
REGULATORY STRUCTURE	❑ Regulatory powers ❑ Licence vs concession		
RISK TRANSFER	❑ Short-term vs long-term ❑ Limited vs large		
INDUSTRY STRUCTURE	❑ Number of parties ❑ Barriers to entry		

PERFORMANCE

While grey-areas will always remain, it is possible to conceptually separate the approaches into Structure and Conduct.

- **Structure** is the nature of the market or firm itself and is generally driven by views about how much competition is possible. The approach to utility reform has generally been to separate out the 'competitive' elements from the non-competitive or monopoly elements
- **Conduct** is more about the 'rules of the game' once the structure has been established. There is a clear link between the options available for conduct given choices about the structure.

We have chosen examples that represent different uses of the tool-kit – along the continuum between fully public and fully private

The range of industry categories used in selecting comparators

Key information & insights from each case study (*see* Attachment for further detail)

Government department	Government owned company	Privately owned, 1:1 regulatory relationship	Privately owned, multi:1 regulatory relationship	PPP / competitive concession
▪ Dutch Health Ministry – One of 12 government ministries responsible for development, execution and monitoring of the policy and legislation – Ministries are accountable to parliament – Strong expectation on delivering value-for-money given it is using tax-payer funds – Focus on assessing the outputs / outcomes generated. This is done at a high-level given complexity about defining longer-term outcomes that Ministries are responsible for. No specific ex-post efficiency measurement framework in place – Instead there is an independent check by the National Audit Chamber that assesses the overall use of the budget vs the overall meeting of the commitments made	▪ Rijkswaterstaat (RWS) (includes Dutch Highways Agency) – Significant work to get Ministry and Agency on same page – Involved development & agreement of asset mgt approach & costing ▪ Network Rail – Privatisation separated tracks and trains in order to maximise competition – via franchising – Corporate structure evolved from private sector, to private for profit / not for dividend, to publicly owned – Regulation and incentive design has also evolved. For CP6 now more explicitly recognising public nature – Use of unit costs with long period of development from NR to get sufficiently robust systems – Wide variety of measures of efficiency (variance analysis, benchmarking, input & output measures) with major debates – particularly around whether not doing work is an efficiency or a deferral	▪ HS1 – 30 year Concession. ORR to regulate efficiency and asset hand-back condition. More limited powers cf NRIL (e.g. no licence) – Variance analysis and explaining efficiency at early stage for renewals given internal systems. Focus instead on input proxies such as asset management maturity plans ▪ National Grid – Goal is efficient, but also facilitating operation of the wider (more competitive) electricity market – Corporate form has evolved as different approaches to solving these problems – now regulated by Ofgem and functions to be split – Uses an array of customer performance measures, innovation funds, and efficiency out-performance sharing mechanisms with customers – Trade-off between system safety and NG efficiency	▪ UK water companies – Privatisation of 10 authorities in 1989 – Now >30 companies serving 50m customers, regulated by Ofwat – Solutions driven by need for massive capital investments and long-term security of supply – Focus on driving efficiency via yardstick regulation in setting challenging ex-ante budgets + incentives inherent in private ownership – Also stimulating competition in the market where possible – Limited ex-post focus on realised efficiency – instead a range of measures about customer service – Disagreements about budgets, and whether cost-reductions are efficiency or change in risk. Limited evidence, for example, to support industry claim of improved productivity. However, broadly constant real prices after £150bn capital investment	▪ Dutch road PPP (de Groene Boog – enhancing capacity on A16 near Rotterdam) – Major road (and other sector) enhancements are typically delivered via PPP arrangements – Where the outputs can be defined and measured this allows competition in delivery and transfer of risk from public to private sector – The mature tender process arrangements are seen to by definition deliver an efficient outcome in delivering the required outputs including safety, environmental outcomes and noise reduction – The tendering authority checks this using cost models (a 'shadow bid') with intelligence built up over time – Limited ex-post measurement of efficiency is required – this is an issue for the private shareholders – Other measures check that the consortium maintains correctly for the 20 year period

Increasing use of private sector ownership and competitive incentives…closer to competitive market

The comparators and other analysis confirm the difficulty in measuring efficiency and the need for a long-term, iterative approach that evolves with the sector

1. Industry reforms are undertaken to 'fix' quite specific issues, and the regulatory and efficiency measurement approach evolves accordingly:
    - For example many of the regulatory duties in the water sector concern the ability of the water companies to finance investment – in order to attract private sector parties that would raise the capital needed
    - Highways England has an efficiency KPI focussed on capital projects as this is one of the main intended benefits of the creation of a company and committed funding streams
2. While it is a common goal across regulated sectors, and there is a wide-ranging toolkit available; no single approach is commonly used or accepted:
    - Even the fundamental approach of RPI-X has been called into question, with Ofgem adopting the RIIO (Revenue = Incentives + Innovation + Outputs) model
    - Despite 25 years of experience with a number of 'similar' industry parties, there continues to be significant disagreement about what is achievable for water companies
    - Likewise, the 'proof' of unit costs for Network Rail is unclear
3. The inherent difficulties in measuring efficiency are clear, requiring a long-term mind-set:
    - Many of the drivers of efficiency (ownership and industry structure) that have been relied upon are not possible for HE – for example it is not possible to separate 'competitive' from 'non-competitive' services or create additional comparators
    - Regulation is explicitly a multi-period 'game' in the context of regulatory theory. The regulator is seen to have less information than the regulated party, and so needs to provide incentives for revelation of that information over time. This clearly is still happening in industries with 25 years of experience.

Other industries use a range of proxies for efficiency – in keeping with the number of components of an 'efficient capital project'

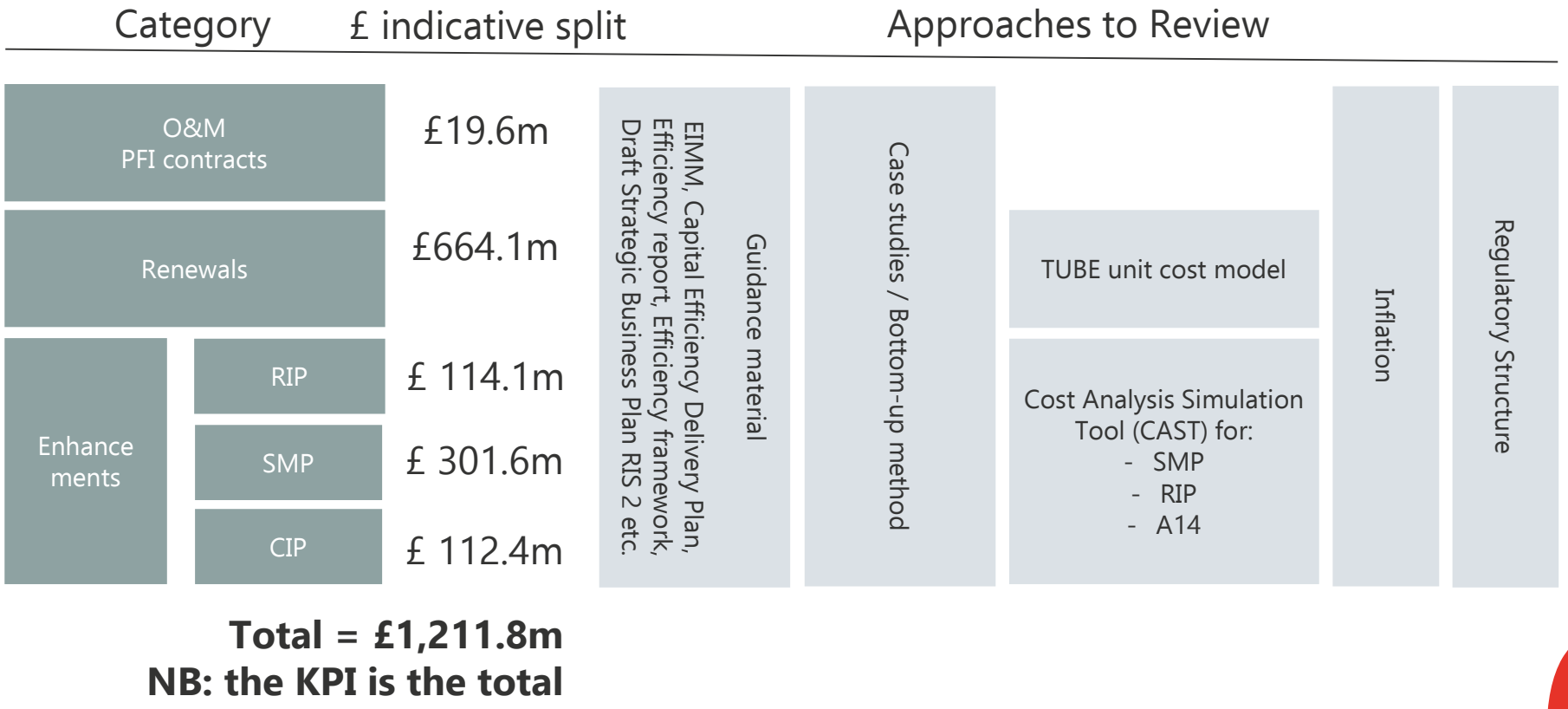
4. What is measured ex-post depends heavily on the structure and nature of the industry. But most regulated industries explicitly use a wide-range of metrics, and the more mature assess these in a holistic way:
    - Sectors have rarely used direct measures of efficiency out-turn as a KPI. They have relied on incentive structures to set challenging revenue allowances and other proxies of good performance to protect customer and longer-term interests that might be traded-off for short-term cost savings.
    - Unit costs form an important (but challenging) part of assessment for Network Rail, and also for the Dutch Highways Agency – with considerable time and effort required to bring this to maturity
    - Almost always a degree of 'stretch' in efficiency targets embedded into revenue allowances. These are generated by comparator information where that is available, or more arbitrary top-down decision making
    - Balanced score-cards are widely in use – particularly in mature sectors. There is a realisation that there are many areas of interest, with the achievement of one outcome trading-off achievement of another.
    - In industries where there is more of a 1:1 relationship with the regulator there is more emphasis on proving excellent 'inputs'. For example, HS1 argues that if it has the right asset management maturity development then it will by definition be efficient in a long-run sense. National Grid uses the Innovation Fund to provide proof that it is 'hungry' and demonstrably seeking out efficiency opportunities. But it takes work and time to develop this capability.
    - Wider proxies in use reflect the different contributions to an efficient capital project outcome. These include (i) evaluating the best project, with WLC optimisation (ii) sophistication in setting budgets and understanding cost-drivers / risks (iii) informed asset decision making (iv) customer outcomes (v) long-term asset health (vi) measures of the degree of innovation

Review of HE progress to-date

We have looked first at progress in RP1, and then at RIS2 proposals. We have assessed each of the components of the efficiency measurement framework

HE has undertaken a number of complementary activities in the course of RP1 and in preparing RIS2 proposals – these are summarised in the graphic below. We have assessed each of these activities individually, reviewing whether the activity is fit-for-purpose, whether the underlying methodology / calculations are sound, and overall how well the task provides evidence that demonstrates that the efficiency KPI is being met. Because of its importance, we have looked in detail at the approach taken to evaluate how inflation out-turn has impacted on efficiency measurement.

Elements to review for RIS 1 and RIS 2
Split over O&M, Renewals and Enhancements



Total = £1,211.8m
NB: the KPI is the total

The existence of the EIMM and the widespread involvement of senior HE staff in governance provides a good basis for measuring efficiency

The EIMM for RIS1 / RP1 gives a good overview of the efficiency process and what happens in every step in the efficiency process.

- Well thought-out process with a high level of detail about what is happening how and when
- Related, clear and well-constructed assurance processes setting out roles, responsibilities and accountabilities
- Clear buy-in from senior management
- Important commitment to transparency
- Helpful and appropriate examples of how to define efficiency (e.g. the circumstances in which unspent risk is treated as efficiency) that make sense without over-complicating the process
- Useful conceptual break-down of cost effectiveness into components of economy, productivity and effectiveness that allows consistent classification of efficiency initiatives

Besides the EIMM there are many related documents that provide details of the overall approach, including the various Business Plans and the Efficiency Delivery Plan.

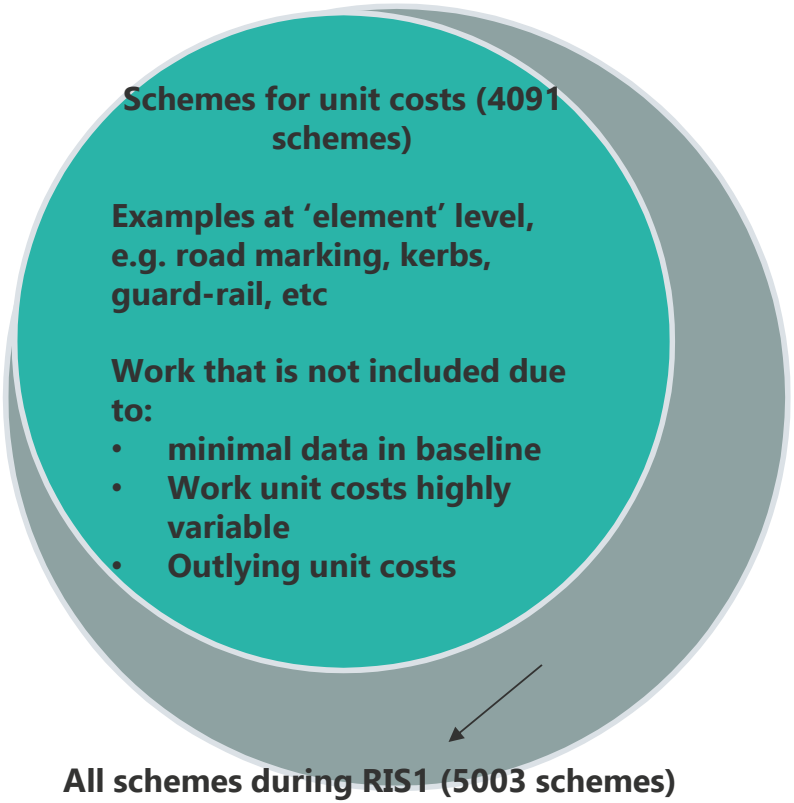
There are inherent challenges in developing a complete guide to an area as complex as efficiency management. In RP1 not all of the activities set out were able to be achieved – for example it was envisaged that there would be pre-efficient costs calculated for each scheme. The RP2 approach will helpfully continue to refine the EIMM in terms of:

- How often to update it and how to make it a real living document rather than something that is updated for each subsequent RIS
- How to reflect the right level for detailed calculations and treatment of definitional issues. Depending on the likely readership / intended audience, there could be some high-level discussion in the EIMM and reference to more detailed documents
- How to balance / incorporate the role of the ORR as Highways Monitor with the internal assurance process

For renewals the TUBE unit cost model provides good coverage and provides insight by comparing 'pre-efficient' costs with out-turn costs

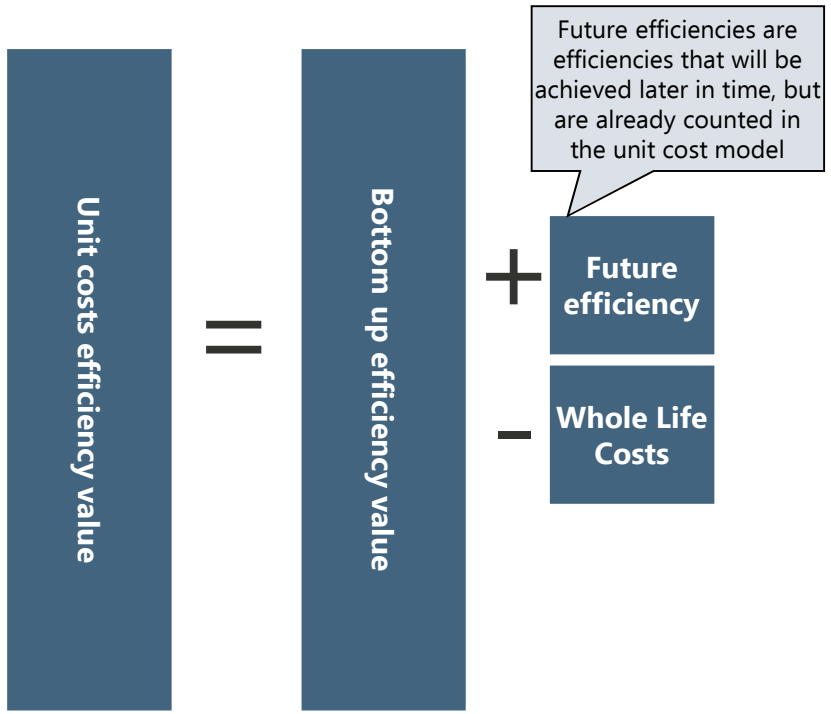
Significant coverage of renewal schemes in sample

Compared to the total schemes in RIS1



Validation of unit costs

Through a comparison with the bottom-up method



The two unit cost models for enhancements (RIP and SMP) identify a distinction between consistent costs, variable costs and abnormal costs

Unit costs are developed for the SMP and RIP with;

- Consistent element costs; stable costs [75%]
- Variable costs; depend on quantities [25%]
- Abnormal costs; normally not present [1%]

The units costs are used for two things:

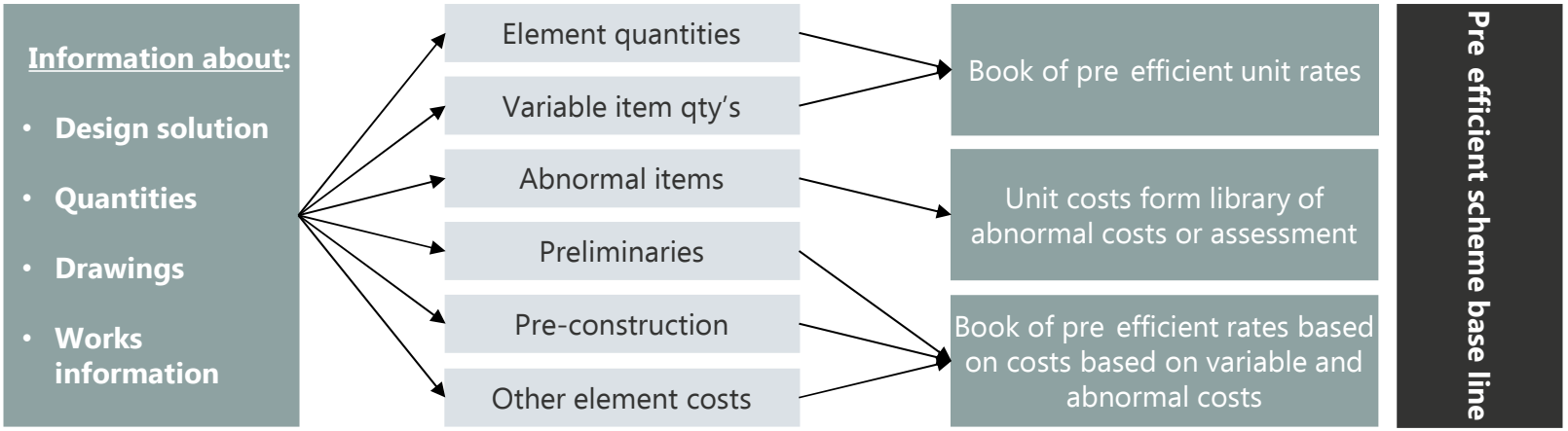
- Define the pre-efficiency scheme baseline.
- To calculate efficiencies. Efficiencies are calculated as savings compared to the pre-efficiency scheme base line. These are changes in unit costs.

The baseline units are defined in 2015 and they are corrected each year for inflation. The baselines are not corrected based on the results of delivered projects. The baselines will be re-defined on new projects for RIS2.

For complex infrastructure programme unit costs couldn't be made, since there are too many variables in the CIP. Sometimes elements of the RIP and SMP models are used to calculate unit costs of part of the CIP

Enhancement unit costs model

Used for RIP and SMP



The approach to developing unit costs is sensible given the available information, and the methodology reflects the nature of each individual scheme

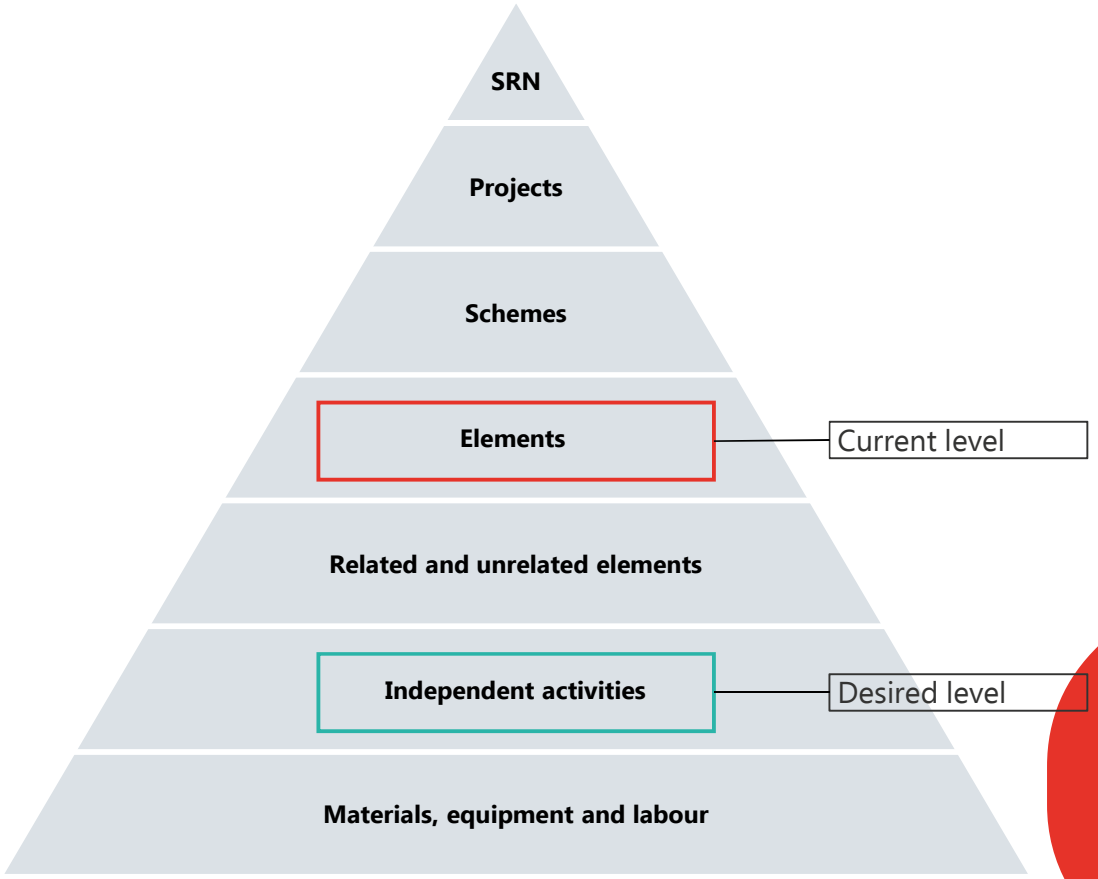
Challenges in unit cost measurement

The main challenge for HE is that meaningful information is available at a high-level of 'unit'. This is in keeping with HE having been recently created and working to change the contracting process to provide more detailed information.

In the longer-term HE is moving toward unit costs defined at an 'activity' level which are subject to less inherent variation, and where the impacts of key factors – such as the mix of schemes being delivered, and the road occupation / scheme delivery strategy – can be assessed and quantified. This is very much a long-term endeavor and HE has plans in place to continue developing its unit cost approach in RP2

Different levels in road projects

With the current level of unit costs and the desired level



HE undertakes significant and detailed analysis of where efficiencies arise, and their drivers. Not all of this analysis is reflected in the summary case-studies

Implementing good case-study analysis is a difficult task given RIS1 was set based on an early-stage of development of most of the schemes. A major task for the case-studies is therefore to create the 'counter-factual', what it is expected the budget would have been. This is clearly not easy to do and is also time-consuming.

The summary case-studies that HE produce are – in our view – at too high a level to provide real insight into the drivers of efficiency and the out-turn performance. However, the underpinning analysis exists, and HE appear to have a good conceptual framework for identifying the causes of efficiency and how to judge the 'pre-efficient' budget. The key issue appears to be a tension between use of the HE internal assurance processes and the information needed by the ORR to successfully fulfil its role as Highways Monitor. We consider that both these activities can be highly complementary. Currently the approach is that HE share the summary case-studies with ORR on a quarterly basis (which have had internal assurance) and ORR has the chance to ask follow-up questions and seek further information. The appears to be a case for providing more detail to start with – which is where real insight can be gained – but across fewer individual projects to prevent undue resource being consumed in the process.

WLC adjustment approach

HE calculates total efficiency in two broad ways:

- The top down which measures the change / improvement in unit costs and multiplies this by the total units to get the overall efficiency. (in practice a sample is taken and extrapolated to match the total activity)
- The bottom up which looks at the specific efficiency in a scheme via a case-study

In comparing the totals from these sources, HE adjusts for schemes that have a WLC benefit. For example, replacing lights with LED increases the initial capital cost to replace the lights, but has a significant business case because of longer asset lives and potentially lower maintenance costs. We consider that HE has a robust and appropriate methodology to deal with this:

- While HE typically takes an earned value approach to recognising efficiency, for WLC schemes it recognises the future benefit now. This is appropriate as it provides the right incentives to minimise WLC which is in the interests of road-users, and is simpler than creating additional pots of spend or transferring between budgets
- The internal analysis is robust and goes through a number of checks and balances before the final business case is approved and the results are assured
- For comparability between top-down and bottom-up it is appropriate that such schemes are excluded.

As well as providing benefit in demonstrating the efficiency that has been achieved, case-studies can play a key role in the continuous improvement cycle

The other challenge for HE is how to demonstrate that the good ideas and innovative working reflected in each of the case-studies is embedded into the continuous improvement cycle. This could include, for example, a commentary of the out-turn efficiency calculations vs the break-down of how the £1.2bn efficiency KPI would be delivered in the HE *Capital Efficiency Delivery Plan* (November 2016). Clearly the way efficiency is achieved will evolve over time and the plan will change – but how it changes and the lessons learned could be helpful in the development of future plans.

Case-studies provide a useful discipline on HE in terms of demonstrating efficiency achievement, and should provide the ability to share lessons across regions as well as fostering the testing and evaluation of innovative solutions. Effectively this is the start of a comparator / benchmarking analysis which can be extended over time. It is expected that HE will have internal processes in place to facilitate these activities.

Finally, for completeness case-studies would also highlight – on a thematic basis – instances where it has not been possible to deliver the expected efficiency and/or where there has been higher cost out-turn due to factors beyond management control. It is important to emphasise that the purpose of this is NOT to show HE has done a bad job – it is highly unlikely that all plans turn out as expected. The purpose is to add extra insight into what is possible using best-practice and identifying robust future efficiency targets.

Inflation in RP1 has been lower than forecast. In-principle this reduces the post-efficient cost of delivering the RIS, and the exact impact needs to be assessed

Context & overview

The HE funding for RP1 was set in nominal terms, and efficiency calculations likewise. As inflation has been lower than forecast, the overall post-efficient budget for delivering the RIS should be reduced by the size of the inflation benefit in order to meet the original efficiency target. As at October 2019 the RP1 inflation benefit is calculated as £601.3m so this is not a trivial issue.

HE analysis suggests that (a) not all of the inflation benefit has been received by HE and so the post-efficient budget should not be reduced by the full amount; and (b) separately, it has used some of the funds made available by inflation benefit to deliver value and/or cover additional scope in a way that also needs to be recognised.

We have undertaken a detailed review of the logic and reasonableness of:

- The approach to calculating the overall inflation benefit
- HE's adjustments for inflation benefit they have not received
- HE's adjustments for other volume / value that should be counted as efficiency in the overall assessment.

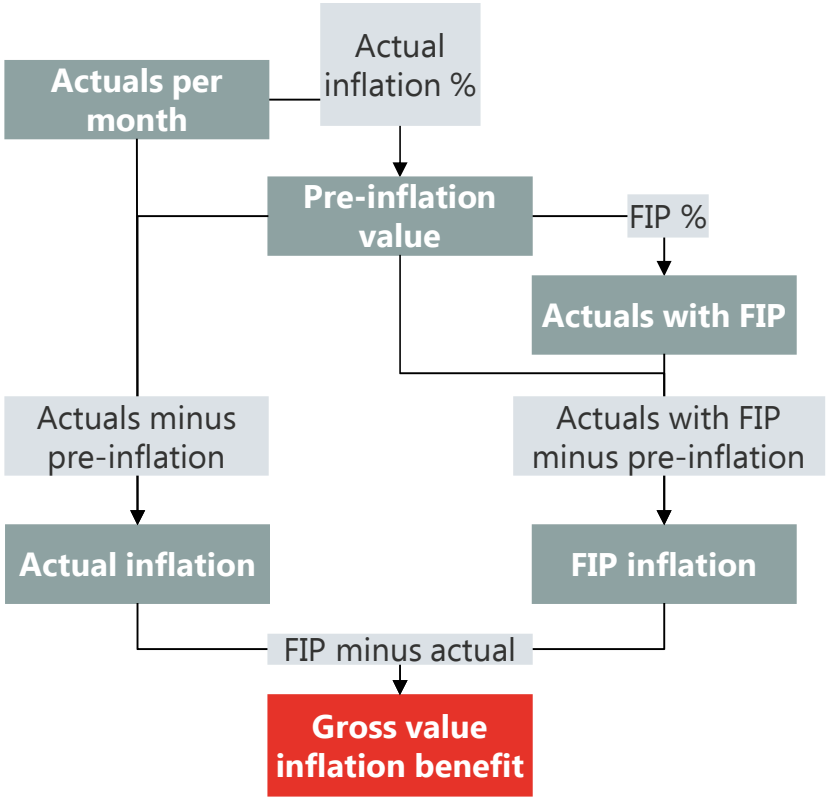
As a result, we have made an assessment of the net impact of these adjustments on the overall funding in real terms.

Elements of the review – HE proposals & analysis
October 2019 values

Overall inflation benefit calculation £601.3m	All other things equal, this should be the reduction in the overall post-efficient budget to deliver RIS1.
Adjustment due to Tier2 supplier contracts £77.4m	Some supplier contracts are lump-sum so don't reduce for lower inflation (or vice-versa). HE argues it does not therefore receive the full inflation benefit
Inflation benefit for SR10 and legacy schemes £38.0m	Similarly, HE argues that certain legacy schemes were allocated fixed nominal budgets agreed with suppliers and including all risks like inflation
Value generated by higher renewal volumes £84.0m	HE analysis shows that it has over-delivered against renewal volumes within the original budget. HE argue that they have used the cash available because of lower inflation to deliver greater value
Adjustment for over-spend on SR10 legacy schemes £35.1m	HE suggests that some of the budget freed up by lower inflation has been used to cover cost over-runs beyond management control
Net adjustment to overall post-efficient budget to deliver RIS £366.8m	Not all of the adjustments above are directly related to the inflation out-turn. The net impact should be seen as part of the overall assessment of whether the RIS has been delivered for post-efficient budget

HE has a robust method to estimate the inflation benefit drawing on the specialist knowledge of the Building Cost Information Service (BCIS)

Calculation of the efficiency in flow diagram
This method is used for capital renewals and enhancements



The steps taken to estimate the inflation benefit make sense

Overall the first decision is to apply a different inflation rate to 'capital' and 'resource' spend. This seems appropriate.

Within each of these categories (and our focus is on capital inflation which is applied to renewals and enhancement spend) individual indices are applied on a monthly basis to baskets of spend. A total of 10 cost driver categories and 18 individual indices are used. The indices are applied on a weighted basis representing the split of spend by item.

HE has commissioned BCIS to do the analysis which draws on the specific expertise of that organisation and allows deep professional judgement to be applied. Some sampling and internal HE checking has been applied to the splits.

Overall his provides a robust and well constructed estimate of the inflation benefit – i.e. the difference between forecast and actual nominal spend. The calculations are clear and consistent with the intended logic. Significant extra time could be spent on the calculations without any material improvement in robustness.

For the future, it is suggested that HE continue to monitor and update the categories and splits of spend as data become available.

The two adjustments relating to treatment of inflation in supplier contracts make sense and use a robust methodology in calculations

Adjustment due to Tier 2 supplier contracts

- HE has many supplier contracting arrangements. With some suppliers HE agrees a nominal lump-sum (with some exclusions / risk-sharing arrangements) that passes risk of a number of items including inflation out-turn onto the contractor.
- For the spend contracted in this way, HE suggests that it does not receive the benefit of lower than forecast inflation and that the overall benefit calculation should be reduced accordingly. This reasoning is sound.
- The lump-sum arrangements is used with some Tier 2 suppliers. A sample of 3 schemes is used to identify the proportion of spend that is (i) Tier 2 not Tier 1; and (ii) proportion of Tier 2 that is lump sum
- It makes sense that a sample is used – the key question is whether 3 is reasonable. While there needs to be some confidence interval attached, the choice of sample appears robust for the following reasons:
    - The sample covers £334m of spend which is significant (5% of total spend in this category)
    - There is limited variation in the numbers from each of the sample contracts suggesting it is representative.
    - The value calculated – that 19.6% of all spend was via lump sum contracts has been subject to professional expert check and appears in line with industry norms
    - There would be a significant cost in increasing the sample size
- Overall we consider that this adjustment is reasonable and robustly evidenced.

Adjustment due to Legacy scheme contracts

- This is a similar argument. RIS1 included a dedicated pot to finish legacy schemes that had been started but not completed before the commencement of RP1. This pot was based on amounts agreed with contractors, including a best estimate of the out-turn risk-pot arrangements and what the expected value of the pain-gain sharing would be.
- This can effectively be seen as a lump-sum arrangement where HE does not benefit if inflation is lower than forecast (and vice-versa).
- The calculations are clearly set out with appropriate formulae, and utilise the BCIS indices approach to clearly net out the element attributable to inflation benefit in a robust way.
- As with other adjustments we have traced the spend back to underlying Oracle information which identifies the SR10 and legacy schemes. The audit trail is clear and totals reconcile.
- It is important to note that we have not been asked to comment on whether the contracting arrangement was optimal – but whether given the contracting approach it is reasonable to net off the inflation benefit accruing to these schemes from the overall inflation benefit for capital schemes.
- HE is already doing significant work to evolve its contracting strategies which are underpinning much of the efficiency being realised in RP1.
- Overall we consider that the suggested adjustment is reasonable, logical and well-evidenced by the calculations

The other suggested adjustments based on additional volume are much harder to evidence, and we support a conservative valuation

Additional renewals volume

- HE has delivered higher renewal volumes compared to an initial baseline. HE proposes that the value of this additional output should be recognised as it has been done within the original RIS funding envelope and the relevant outputs have been delivered – particularly the pavement condition KPI.
- In principle, the logic is sound – additional volume for the same post-efficient budget is effectively an out-performance of efficiency. Three possible ways have been considered to value the benefit:
  - Value of additional volume using established unit costs – value calculated at >£300m
  - Conservatively, adjusting for the additional inflation benefit arising from renewal spend – £168m.
  - An even more conservative estimate of half the inflation benefit, £84m.
- It is hard to find definitive 'proof' one way or the other. On balance we support the use of the conservative estimate of £84m as there is too much uncertainty to use of the value of the additional volume:
  - There is a lack of a comprehensive audit trail to support the initial volume estimates which were set by HE regions early in RP1 as they had not been fully defined by the RIS. This baseline does not appear to have been subject to the same scrutiny as other post-efficient budgets.
  - There is uncertainty about the precise connection between the volumes and the pavement condition KPI – noting that this does not 'prove' or 'disprove'. The KPI is not being sufficiently exceeded to offset the uncertainty.

Legacy scheme over-spend

- As set out previously, a dedicated pot was agreed to complete legacy schemes in RP1 covering pinchpoint schemes and Dartford free-flow, etc. A total of £175m was spent against the budget of £140m
- HE argue that because the additional £35m was absorbed within the RIS budget and because the legacy schemes are effectively outside of the efficiency KPI, then this should also be an adjustment to the overall top-down assessment.
- There are some difficulties with this approach as it would effectively mean that overspend in this one area is treated differently to other areas
- We do not consider that there is sufficient evidence to support the adjustment, and consider that no allowance be made. To support an adjustment HE would need to provide evidence that:
  - The overspend was due to factors beyond management control (ie that it was due to an 'inefficiency' in delivery of the legacy scheme) and that the legacy schemes were explicitly outwith the efficiency KPI.
  - Or, that the overspend was due to additional scope / volume for the legacy scheme that delivers extra value
  - That there aren't any equivalent instances of 'under-spend' across the portfolio that also should be recognised

HE is less than five years into its long-term efficiency measurement journey. It has used available data to provide a useful insight into whether the KPI is met

'Proving' that the efficiency KPI is met

As discussed in detail in this report, it is difficult to measure efficiency out-turn. Even mature organisations with 20+ years of operation debate the precise number. The requirements for certainty are set out in the box to the right, and can only be expected in the long-term.

Further, the nature of the KPI is challenging as it is not updated for changes to the composition of agreed schemes – despite a number of changes to the schemes to be undertaken being agreed between DfT and HE. To some extent this is addressed by having more schemes included in the RIS than were expected to be undertaken, though this is not perfect as different schemes will have different expected efficiency.

HE has clearly not yet reached its long-term position. However the balance of evidence from the case-studies (and particularly the underlying analysis), along with the high-level indications from the unit cost methodologies – which reflect the nature of the schemes, suggesting strong progress toward achieving the KPI.

Long-term efficiency measurement
What is required to have complete confidence that the efficiency KPI is met

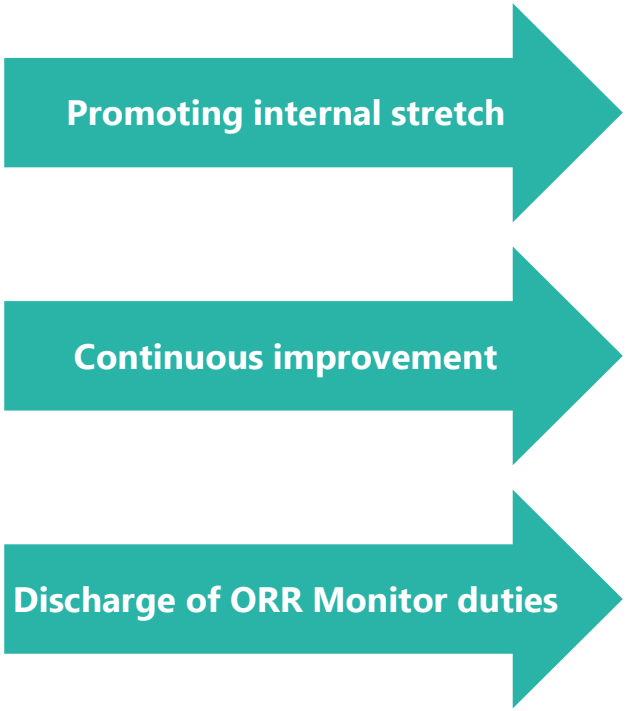
- **Established, mature estimation process to set baseline**
- **Project controls with extensive change-control and variance analysis defining whether a change in spend is efficiency or not**
- **Sophisticated asset-management decision-making tracking asset conditions and understanding the link between short-term interventions and the sustainable delivery of outputs / outcomes**

Gap analysis

Work to-date represents a strong starting point – the gaps are largely due to the early-stage of the HE journey

We have assessed the 'gaps' in work to-date in terms of the summary principles / purpose of the efficiency measurement framework as set out on slide 15. We have made this assessment using the insights from experience in other sectors, our own analysis, and drawing on opportunities already identified by ORR and HE.

It is important to reiterate that the existence of gaps does not imply a problem or an issue with work to-date. Rather, it is part of assessing where HE is on the long-term journey and identifying where best to direct resources.



Gaps / opportunities

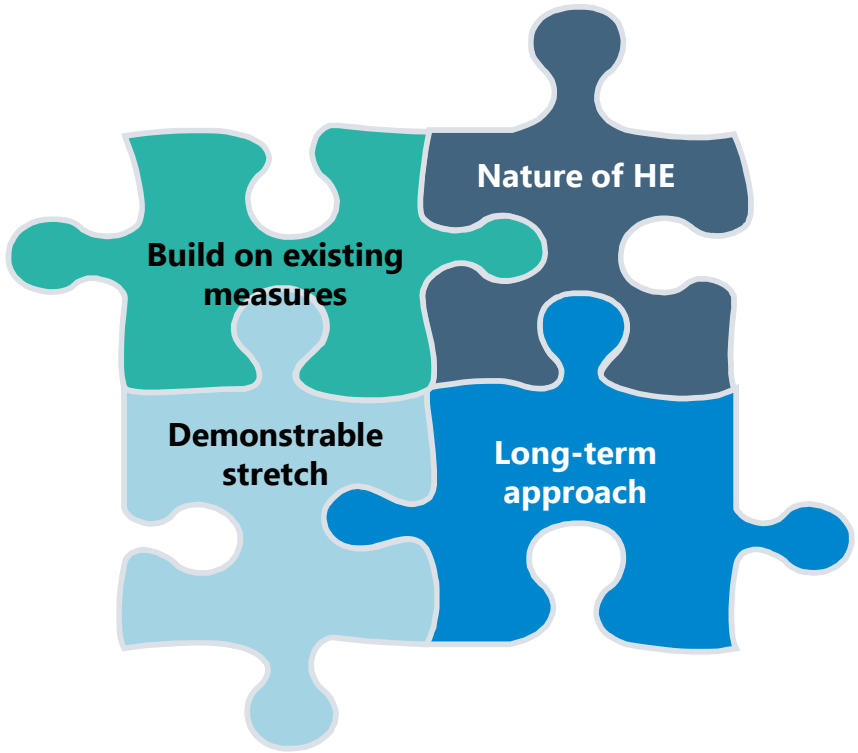
- External comparator analysis to test the art of the possible and provide stretch
- In order to drive continuous improvement and best-practice, identify how much each of the efficiency initiatives contribute to out-turn efficiency
- Related, understand how improving organisational competencies will drive long-term efficiency
- Understanding cost-drivers in more detail, including continuing to develop unit costs at a more detailed activity level
- Robust baseline
- Proactive identification of interim milestones in efficiency measurement
- Capture and utilise a wider range of measures to counter the inherent complexity, and to foster better quality dialogue

Suggestions to evolve the measurement framework

The current approach is good given the early stage of HE's existence – further improvement to address gaps needs to fit with the wider HE development plan

Factors to consider in developing recommendations

Key components to take account of in suggesting improvements



Develop view of long-term evolution in maturity of HE

- Supports development of right measures at the appropriate time
  - Measures reflect state of development so can change over time
  - Measures are consistent with the realistically available information
  - Long-term thinking can be put in place to start developing workstreams now to populate required measures in the future
- Firm commitments that are also proxies for efficiency. For example development over time of asset management decision making

We have identified a number of suggestions that address the gaps, will provide a richer evidence base, and assist HE's efficiency journey

1. Improved baseline

- As far as practicable the baseline for each capital scheme has to comprehensively identify the scope, the expected inputs, the basis of the delivery approach, and the treatment of risk. The plans for RIS2 significantly improve the approach vs RP1. Other consultancy reviews are also addressing how to define scope and will be incorporated into the HE approach as appropriate
- Clearly it is not possible to definitively identify all aspects of all schemes across the Road Period. In keeping with its EIMM process for RP2, HE should update estimates over time, and clearly indicate how the risk pot is being treated in relation to efficiency measurement

2. Identify and report against milestones for the evolution of HE capabilities

- HE should develop an initial draft of its own view of a 'Development Plan' covering RP2 and RP3 (ideally) by end of September 2020. Our own view of what this might look like is provided in subsequent slides.
- HE should also develop SMART interim milestones for RP2 against each of the core components – on a say 6 monthly basis, and report progress against these to the ORR. We do not suggest or expect that these milestones would be regulatory targets. It is intended to be additional information to be taken into account in assessing progress, as well as forming future plans based on learnings over time
- The existence of such a plan and associated milestones provides three key benefits
    - A different source of information about whether efficiency is being delivered. While not regulatory targets, meeting agreed milestones about evolving capabilities can help demonstrate that efficient practices are being put in place
    - Identifying how efficiencies will be delivered assists in cross-tabulating outcomes across different efficiency measures (for example the efficiency levers set out in the HE Efficiency Delivery Plan)
    - Related, progress with milestones and initiatives – some of which will inevitably work better than expected, and others less well – helps with the continuous improvement cycle

We have identified a number of suggestions that address the gaps, will provide a richer evidence base, and assist HE's efficiency journey (2)

3. Continue case-study assessment and provide more detail on a targeted range of cases

- The detailed assessment of what efficiency opportunities have been achieved, and the size of those efficiencies is a key piece of evidence to support the KPI achievement
- We suggest that a greater level of detail is provided about a small number of representative case-studies in order to help the ORR fulfil its Monitor duties, without increasing the regulatory burden. This complements but does not replace the need for internal HE assurance processes.
- The sample would need to cover the different categories of efficiency initiatives, and while focusing on areas of bigger spend, also provide some insight into the range of initiatives. This would also be in line with the intended move in RP2 to more thematic case-studies
- To support continuous improvement and reconciliation of different efficiency measures, the analyses should tabulate efficiencies according to the efficiency initiatives being proposed by HE (which could also be categorised within the system of economy, productivity and effectiveness)

4. Continue to develop unit cost measures so that they are ultimately at an activity level which should be chosen to reflect key project cost drivers

- This is a critical part of long-term cost-intelligence and efficiency insights and will contribute to a better understanding of cost-drivers
- However this is a long-term endeavour likely to take 5-10+ years to bring to full maturity. As set out in a subsequent slide, appropriate prioritisation could lead to some additional data within 2 years
- In the first instance, HE should develop a plan of how it will develop its capability in this area and the likely outputs to be realised within RP2. We suggest this plan is developed by end September 2020
- A plan should usefully incorporate trials of econometric / statistical approaches to total cost estimation to gauge benefit in terms of cost drivers. It is understood that this is already underway at HE
- It should also link to external comparator / benchmarking analysis which can provide insight into the choice and size of activity measures
- Finally, HE should identify productivity measures (initial suggestions below) to complement unit cost assessment though these should be supporting evidence rather than regulatory targets

We have identified a number of suggestions that address the gaps, will provide a richer evidence base, and assist HE's efficiency journey (3)

5. Comparator analysis to assist with best-practice identification

- Comparator analysis is difficult – but if done in the right way provides insight about the art of the possible and where HE is currently at best practice or where there may be opportunities to consider. Even identifying that there are no helpful comparators or nothing to learn is a useful outcome
- We suggest that HE develop specific plans for best practice identification, building on plans / discussions that have already taken place, and complementing the regional approach. This will bridge the gap between the qualitative and quantitative measures, and give a measure of the HE stretch. The greatest initial opportunity is in a bottom-up analysis drawing on exchange of best-practice, rather than a top-down statistical exercise
- We would suggest that the plans cover:
  - Approach / methodology in the next 6-12 months, though we suggest this would commence with a relatively small and focused number of comparators, and a small number of points of comparison. Initially there is also likely to be reliance on professional judgement and insight to support the analysis. It will take many years to develop a sufficient time-series and comparators with robust and meaningful data sets that can be used for statistical / econometric analysis
  - Engage comparators and first information exchange in the first half of RP2
  - Commitment to this referenced in EIMM and/or reflected in future updates

6. Process for overall assessment

- We suggest that this process continues to be led by HE and that HE provides, on a quarterly basis, an estimate of how it is tracking against the end of RP KPI, as well as latest available supporting evidence including progress against development milestones. The intent is that the annual efficiency report produced by HE should not contain any surprises – anything going better or worse than expected should have been flagged at one of the quarterly meetings. In turn, the annual process should lead to no surprises in the ultimate end of RP assessment against the efficiency KPI.

Monitoring should evolve with HE's long-term plan of development – otherwise it will be counter-productive and self-defeating

Initial Rebel suggestion for Development Roadmap

Target capabilities for core elements that drive improvements in the HE outputs

RP → / Core components ↓	RP1	RP2	RP3	RP4	RP5	RP6
Budget estimation	Early stage top-down DfT determination	Early stage with additional challenge and some stretch. Some analysis of risk based on experience to-date	RP2 out-turns + efficiencies factored into RP3 forecast. More bottom-up support for unit-costs and improved risk analysis; unit cost at activity level per object type in asset catalogue	RP3 with more refined risk analysis and emerging view on link between performance and cost	Fully-formed bottom-up cost estimate with well-developed risk analysis	Continuous improvement on RP5
Asset information	Basic information held at local level. No central repository of all information	Standardised asset breakdown and route breakdown; Plans to centralise and coordinate information	Some condition information available for prioritised assets. Implementing centralised repository	All asset information centralised and harmonised, including relevant condition information and readily available to decision-makers	Continuous improvement on RP4	Continuous improvement on RP5
Asset decision-making	Based on historical approaches and time-based interventions. Local expertise key in decision-making	Broad trade-offs between cost and safety / customer impacts	Understanding of criticality and better WLC decision-making for priority asset groups / largest areas of spend	Improved decision-making approaches across all asset categories	Fully demonstrate need for all new capex. Understand link between spend and outputs. Sophisticated approach to optimisation and treatment of risk	Continuous improvement on RP5
Delivery planning	Project by project. Local expertise. Improvements in way that combine work packages	Project by project. Local expertise. Improvements in way that combine work packages	Initial efforts to quantify trade-offs in delivery of work and to optimise across the network. Implemented for largest schemes	Widespread and well-accepted approach to understanding planning process and optimising delivery	Sophisticated combinations of work based on deep understanding of trade-offs between construction cost and safety / customer impact. Able to quantify this	Continuous improvement on RP5
Contracting strategy	Moving toward regional partnerships. [HE taking lead role in specifying works and competitive supply chain pricing]	Moved away from historical contracting approach. Regional partners and Alliances in place. Longer-term pipelines being established	Contractors actively involved in setting innovative ways for key project delivery	Fully fledged delivery partners that share HE incentives and aspirations. Long-term pipeline but maintain competitive tensions	Optimised sharing of risk/reward with contractors. Helpful challenge about delivery options. Security of supply chain to encourage investment	Continuous improvement on RP5
Organisational culture	Keen to deliver quality products but at early stages of a really testing internal environment. Grappling with trade-off between engineering excellence & customer impact	Predominant focus on locking in safety improvements and bedding down new corporate structures	Ability to relate engineering challenges to customer impacts. Initial innovation projects	Growing culture of innovation and challenge across all aspects of the business. Willingness to utilise the growing stock of information and share learnings across HE regions	Key decision-making aligned to customer wants and genuine internal challenge around the best long-term optimisation schemes. Analysis fully based on data	Full transition to completely customer-oriented business with embedded continuous improvement processes, transparency and long-term vision

Metrics for efficiency measurement should be aligned to HE's development and should therefore evolve over time, becoming increasingly quantitative

Suggested development of measures

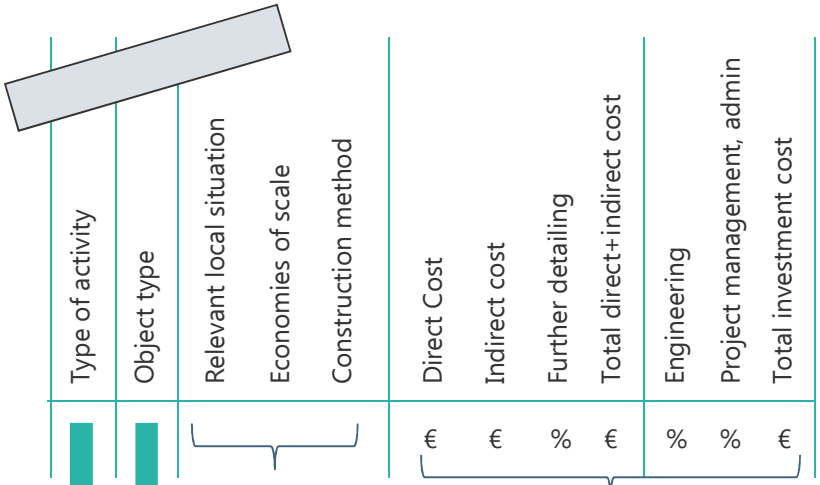
Use and development of measures for efficiency in line with capabilities development

Metrics↓ / RP →	RP1	RP2	RP3	RP4	RP5	RP6
Case-study	➢ Project based analysis illustrating how efficiencies have been secured, and size. Complicated by uncertain baseline	➢ Thematic, and used to support the capability improvements and associated challenges. Help refine goals	➢ *No stand-alone need – embedded into the wider suite of measures (particularly capability)*			
Top-down	➢ Overall assessment of whether committed outputs have been delivered within budget. Uncertainty re baseline	➢ Continues to be core assessment of KPI ➢ Improved view of scope and link to asset decisions / plans	➢ Explicitly factor in challenges beyond HE control ➢ Very clear view of scope	➢ Explicit approach to assessing outcomes of projects not just whether a scheme has been built. Rests on greater understanding of scope	➢ Continuous improvement on RP4	➢ Continuous improvement on RP5
Unit costs / productivity measures	➢ Suite of unit cost models for each capital spend area ➢ Challenges in cost attribution given existing supplier contracts etc	➢ Plan to generate unit costs at activity level within 10 years ➢ Initial cost-driver anaysis ➢ Develop a small number of productivity measures	➢ Suite of productivity measures embedded into the organisation ➢ More detailed reporting of the factors that drive unit costs	➢ Mature understanding of cost drivers and out-turn performance embedded into planning cycle from planning to delivery	➢ Continuous improvement on RP4	➢ Continuous improvement on RP5
Development plan milestones	➢ Not measured	➢ Are milestones for committed capability improvement being met? ➢ Is the quality of decision-making improving in a way linked to capability?	➢ Ongoing milestone delivery, and develop a small number of objective measures of decision-making. Not necessarily IS055000	➢ Continuous improvement on RP3	➢ Continuous improvement on RP4	➢ Continuous improvement on RP5
Comparator analysis	➢ Initial partial and top-down comparisons undertaken across a number of spend items. Broad comparison possible	➢ Develop benchmarking programme covering OM&R + enhancements ➢ Initial focus on getting the most useful cost structure	➢ Benchmarking cost framework complete. Focus on best-practice sharing and thematic studies: e.g. approach to contracting / techn'y etc	➢ Mature dialogue where the limits of comparability are well-understood and focus is how to share good ideas about sector challenges	➢ Continuous improvement on RP4	➢ Continuous improvement on RP5
Role of ORR / regulatory approach	➢ ORR Monitor role. Provides input to decision-making and monitors performance ex-post but does not make decisions around budget. Adds uncertainty	➢ ORR needs to be involved in or have sight of all budget discussions between DfT and HE, particularly where this concerns the baseline	➢ Review of overall KPI structure to ensure fit-for-purpose. Do they accurately incentivise HE to make the best trade-offs?	➢ *Depends on government policy and sector challenges. Range of possible roles for ORR*		

The change of unit costs over time can be a supporting measure for efficiency if the unit costs are defined at an activities level linked to object types

Unit cost data base – client example

Most important elements that drive efficiency



Cost of activities — Transparent cost elements, kept up-to-date annually based on realised project cost

Construction conditions — Definition of all relevant conditions that drive the actual cost, including local conditions, number of assets and possession time

Object breakdown — The object breakdown is the basis for an asset register and provides a catalogue of assets that constitutes the system. The level of detail should be chosen such that actual maintenance and renewal work activities can be linked

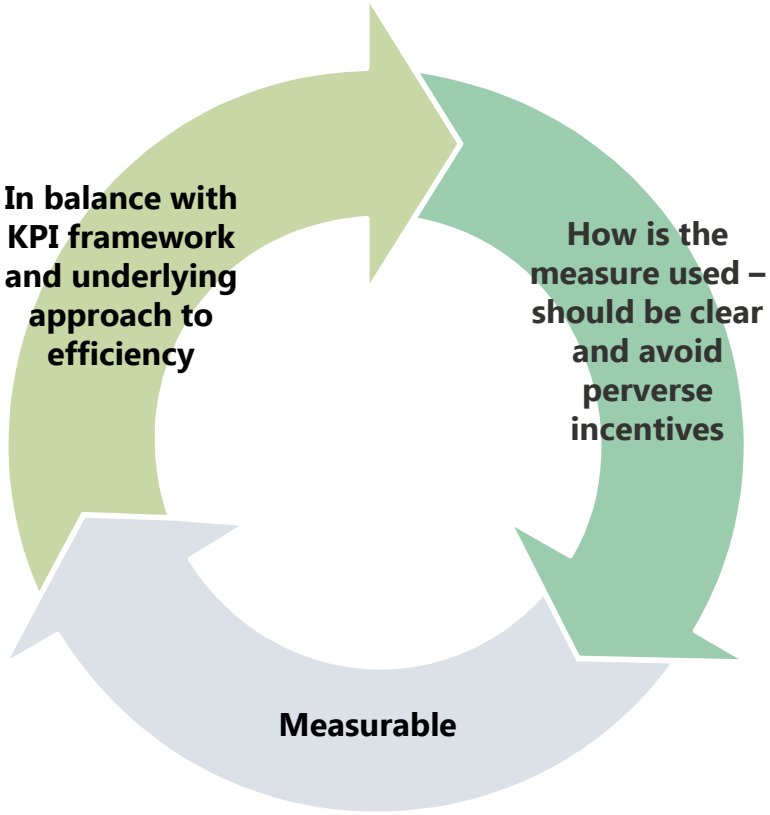
Activity definition — This provides a full overview of all type B (renewal or new built) activities that are applicable to the object type at the lowest level in the object breakdown

Discussion

- For unit cost to be a useful metric, the level of detail at which the unit is defined should be at the level of actual work activities
- The object breakdown provides an asset catalogue that defines all building blocks of the system
- In the next step, all construction activities are identified
- For actual costing, the relevant local condition parameters and project parameters should mapped
- A good cost-database is built on the experience of realised projects (out-turn costs) and is annually actualised
- The cost database is in constant development: when new materials and new construction methods are introduced, the database, these should be included in the cost database
- Working with such a cost database allows to identify impact from the market condition – one important cost driver outside of efficiency
- Developing such a cost database takes time – a prioritised approach should enable to start using it within two years

Activity metrics can support insight while unit costs are being finalised – they should fit within the KPI framework and avoid perverse incentives

The choice of activity measures
Important attributes to be considered



Discussion

Like any metric, it is difficult to devise a perfect activity measure that is unambiguous. HE is already developing ideas reflecting the drive toward (*inter alia*) changes in technology in delivery of projects. The challenge is that it is hard to develop a generic measure that is robust to the variety of projects. For example a 'tonnes delivered per hour' seems to get to the heart of what is desired – better and quicker ways of undertaking tasks – but what is efficient will depend on the size, scope and duration of work-time available among many other factors.

We suggest that a long-list of potential measures are developed and then assessed for pros and cons before the selection of a smaller number to be taken forward. As with any partial measure the context of reporting and associated explanation of drivers is key.

Ideally the measures would support other metrics and provide insight into the challenges and successes of the efficiency initiatives. We do not see them as KPIs of themselves.

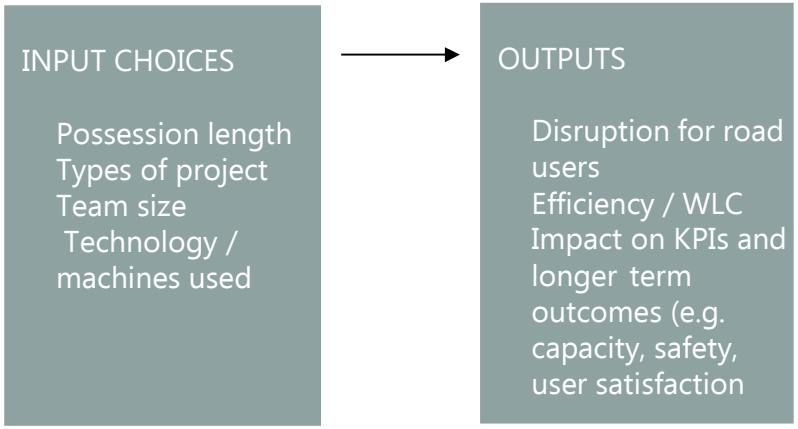
Our initial suggestion of categories of measures to consider, and specific metrics are set out on the following slide.

Ideally activity measures will be proxies for the different ‘elements’ or ‘practices’ associated with efficient capital projects. Potential examples include

- **Effective planning of work:**
  - % of work done to plan [cf 12 / 6 / 1 month prior]
  - ‘Late’ changes to possessions
- **How the time of possessions is used:**
  - % time ‘on tools’
- **Choice of possession time**
  - Disruption to travelling public
- **Choice of technology:**
  - Capital to Labour ratio
- **Time taken to deliver work / volume of work:**
  - Volume of work per shift (e.g. m3 of pavement, metres of barriers, etc)
  - Number of worksites per km of possession taken
  - Size of project team
- **Doing the right work:**
  - Maintenance / renewal backlog
- **Project management:**
  - % of workbank with financial authority to proceed
- **Risk management:**
  - % of contingency used

Activity metrics can deliver useful management insight, but it is unhelpful to make them targets due to the risk of creating perverse incentives

Balancing inputs & outputs
Important attributes to be considered



Minimum resource for overall outputs / outcomes means:

- Right projects
- Right time
- Right teams
- Right technology
- Right procurement

Discussion

With any of the possible metrics listed on the previous page, it is possible to point to the factor that is 'missing'. Or it is easy to see how using a metric as an indicator of performance could create perverse incentives

We see productivity measures as helpful supplemental information to be monitored and used in the assessment of HE performance; that they be seen as part of the suite of helpful information being collected in improving the other measures:

- Assessing whether teams are being productive within possessions means defining measurable and repeatable activities / tasks which is what underpins **unit cost** assessment
- While monitoring these measures over time might give some insight, the real sense-check of whether things are being done well is via **benchmarking** – either across regions or organisations. This provides a validation of the ex-ante assessments and a sense of the possible
- It is particularly difficult to assess the partial productivity measures without an understanding of the **disruption to road users** from choices of possession. This is necessary to assess the 'efficiency in overall resource' not just in the resource to complete a defined project task
- Related, partial measures must be part of a robust overall **KPI framework** with clearly defined trade-offs and interactions (for example, there might be a trade-off between targets around lane-availability and efficiency.)

There will clearly be a resource impact on HE if the recommendations are implemented. Our initial estimate is set out below

	Description	Resource impact (p.a.)
A Case studies	Change of focus but overall should result in some marginal internal staff time saving.	Neutral
B Supporting proxies	Within RP2 this will involve staff time compiling the milestone programmes and then monitoring out-turn	Additional 1-2 FTE across organisation
C Comparator analysis	Likely to involve consultancy resource due to anonymity requirements of comparator organisations. Circa £250k to establish depending on scope of analysis and number of comparators. Thereafter circa £150k for each benchmarking 'turn'	Circa £100-150k consultancy support Plus internal HE oversight / support
D Quantitative measures	Additional time-spent for HE internal stuff to develop and populate activity measures. Additional time spent at local level collecting information. Continuation of internal approaches to unit cost analysis. Supplemented by some consultancy study – circa £100k across RP2	Additional 1-2 FTE across organisation Circa £50k consultancy support

The resource implications for HE are circa £300-600k per annum, though this is dependent on what action is taken. This needs to yield only a small reduction in costs to be justified, but still is a non-trivial factor for HE and its budgeting. The number may be lower if internal staff are diverted from other tasks but this in turn has its own implications

Attachment
Case-study analysis

With many private, regulated companies in the UK water sector, the 'yardstick' approach is the key driver in setting efficient budgets

Structure

32 private water & sewerage companies supply 50m customers, with Ofwat responsible for economic regulation

10 Regional monopolies originally privatised in 1989

Regulation by licence – key duties to protect consumers, enable financing

Promotion of competition and lowering barriers to entry where possible – e.g. large business water users

Multiple other regulatory bodies, e.g. Drinking Water Inspectorate and Environment Agency

Conduct

- Relies on 'competition by comparison' implemented by top-down econometric modelling to set efficient price controls. Rewards best performing and requires 'poor' performing to improve efficiency
- Companies then monitored on balanced scorecard suite of customer requirements

Performance

- Strong realised efficiency
- But even with the large range of comparators and significant data time series, significant arguments about the econometric benchmarking

Overall assessment of efficiency and effectiveness of service delivery

1. Severn Trent and Hafren Dyfrdwy were formed on 1 July 2018 following the realignment of the geographical boundaries of the legacy companies Dee Valley Water and Severn Trent Water. A comparison with 2017-18 performance is not provided for these companies.
2. The legacy company Dee Valley Water provided water services only and therefore the figures presented are representative of the legacy company Severn Trent Water.

National Grid is the sole, privately owned, party responsible for delivering electricity transmission across England & Wales

Structure

1990s split out as part of privatisation efforts to split competitive elements from natural monopoly. National Grid owned by 12 regional electricity companies as providing system operator / balancing services

Privatised in 2012 with economic regulation by Ofgem

2019 preparing for the RIIO-T2 control period (2020-2025) and electricity transmission separated from system operator functions to improve transparency and address concerns of possible conflicts of interest

Key challenges in the changing nature of electricity generation and move from high-carbon to low-carbon, and connection requirements for that

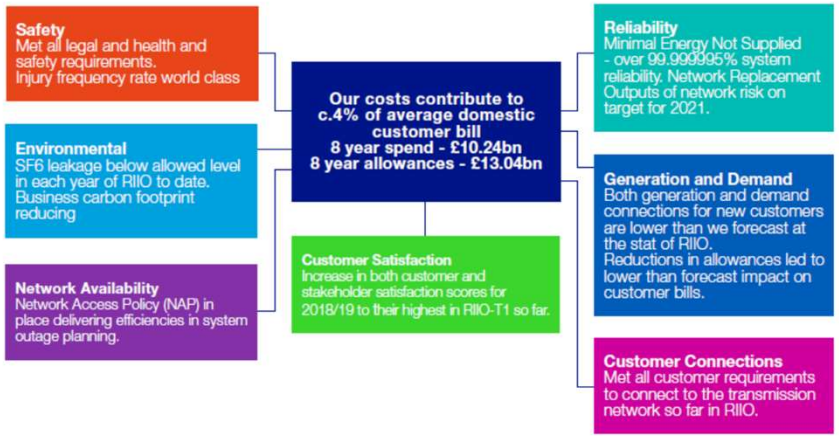
Conduct

- Challenges and innovation initiatives in setting budget
- More reliance on out-performance sharing initiatives with customers
- And strong balanced score-card to check that lower costs not at the expense of network quality / customer service

Performance

- Long-run problem. Big out-performance in first CP possibly a 'soft' determination – CEPA suggests Ofgem cautious about trade-off between cost and safety
- Strong focus on balanced score-card, and also commitment to innovation as a proxy

The infographic below highlights, how we are performing compared to the primary outputs in the RIIO-T1 framework.



TenneT is the sole, State owned, party responsible for delivering electricity transmission across the Netherlands

Structure

- 1996: EU driven liberalisation of the energy market
- 1997: Dutch Energy Act, transmission system operation as separate function
- 1998: TenneT is formed as national grid company (electricity only)
- 2001: Dutch State 100% shareholder TenneT
- 2010: TenneT acquires 40% of the German grid
- TSO activities in NL are Regulated by ACM (Netherlands Authority for Consumers&Market)

Conduct

- Six procedures to assess efficiency are defined and involves the regulator, shareholder and legislator; these are shown with the loops :
  - Efficiency assessment, containing two elements, (1) the need for a capital project and (2) the cost of the project The need for large capital projects Assessment of the rates charged to clients
- Netherlands Court of Audit controls if the parties are actually taking up their role
- Tendering of capital projects to market parties

Performance

- Good balancing between corporate goals and keeping client tariffs under control
- Effective focus on efficiency by assessing high-level elements only:
  1. The need for a capital project
  2. Overall cost in relation to tariffs
- Efficiency in costs through public tendering

Network Rail is now a Government company with full economic and safety regulation by the ORR

Structure

Following vertical separation in privatisation (1994), Network Rail has evolved from a fully private-sector company (Railtrack), to a 'for-profit not-for dividend', to a government owned company that cannot raise its own finance (previously large amounts of finance were raised via the RAB)

Moves now to further change structure with a devolution to route-based settlements – partly to provide more local responsiveness and partly to allow some comparative analysis. Plus splitting out the System Operator function

Regulated by the ORR via licence with a number of wide-ranging purposive obligations as well as many specific regulatory targets

Conduct

- ORR has long been concerned about the lack of private sector incentives / discipline on Network Rail, and not been convinced by the Network Rail argument that it faces significant public scrutiny
- A wide-range of tools and techniques have been employed to exert cost discipline:
  - ❑ Top-down benchmarking (hotly disputed) and 'stretch'
  - ❑ Incentive schemes (e.g. Volume incentive)
  - ❑ Linking staff bonuses to company outperformance in fairly substantial way
  - ❑ Balanced score-card
  - ❑ Route-level reviews
  - ❑ Unit costs and comprehensive reporting through Regulatory Accounting Guidelines
  - ❑ Independent Reporter

Performance

- Struggled with efficiency. Endless arguments about whether that is Network Rail's 'fault'
- Unit cost assessments has been problematic. Potential improvement with look at explicitly identifying the impact of the mix of works, as well as the presence of fixed costs (work by Deloitte for Network Rail Anglia route)

The ministry of Volksgezondheid, Welzijn en Sport (Public Heath, Welfare and Sport) in the Netherlands is one of the 12 ministries in the Government

Structure

The government has 12 ministries which are responsible for the development, execution and monitoring of the policy and legislation.

The ministries are led by a minister

Ministries are accountable to parliament. On Accountability day (each third Wednesday in may) accountability of the financials is given.

The audit office in the Netherlands checks the year reports of the ministries, to check if the budget is usefully spend. They also review the recommendations made in the previous years or by parliament.

Conduct

- Strong focus on realising value for money, since they spend public money.
- The financials are a yearly available budget, mainly based on the spending in the previous years. Budget is added when quality needs to be improved. When budget is reduced, quality is expected to decrease.
- Assumption that ministry delivers value for money.
- This is checked by the National Audit Chamber.

Performance

- Efficiency is focussed on improving quality for the money that is used and rather than necessarily spending less.
- The focus is on increasing outcomes and not on reducing the budget.
- Therefore not directly comparable with HE

No change without a REBEL

Geoff Jones

+44 7479 151159

Geoff.Jones@Rebelgroup.com

Kimmo Oostermeyer

+31 6 13 50 00 42

Kimmo.Oostermeyer@Rebelgroup.com

Wijnhaven 23
3011 WH Rotterdam
The Netherlands
+31 10 275 59 90

info@rebelgroup.com
www.rebelgroup.com