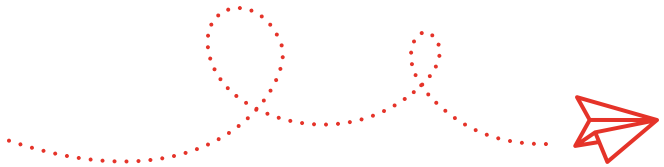
Review of National Highways RIS2 efficiency evidence

R2400702-04 FINAL Report

28 March 2024

Content

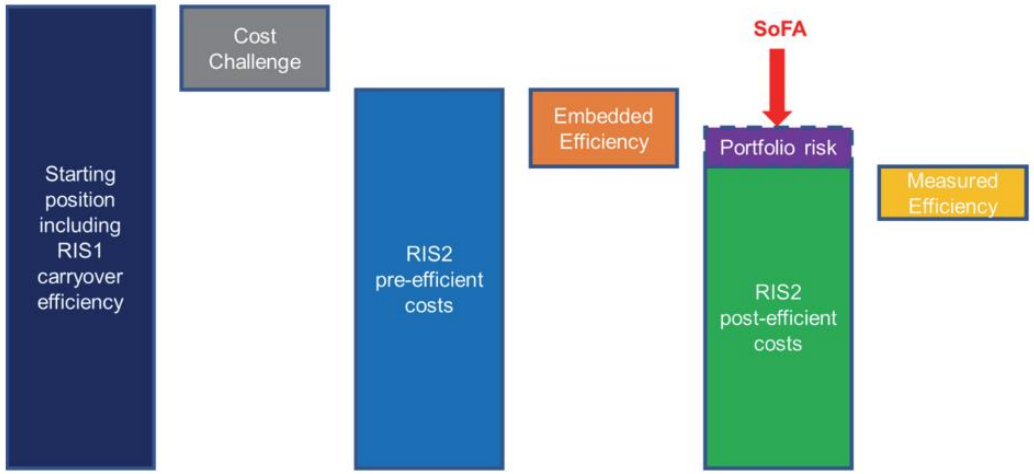


1.

Context and purpose of this study

One of ORR's key activities is monitoring National Highway's progress in achieving its RP2 efficiency target of £2.11bn

Highways England RIS2 Efficiency Identification and Development Process



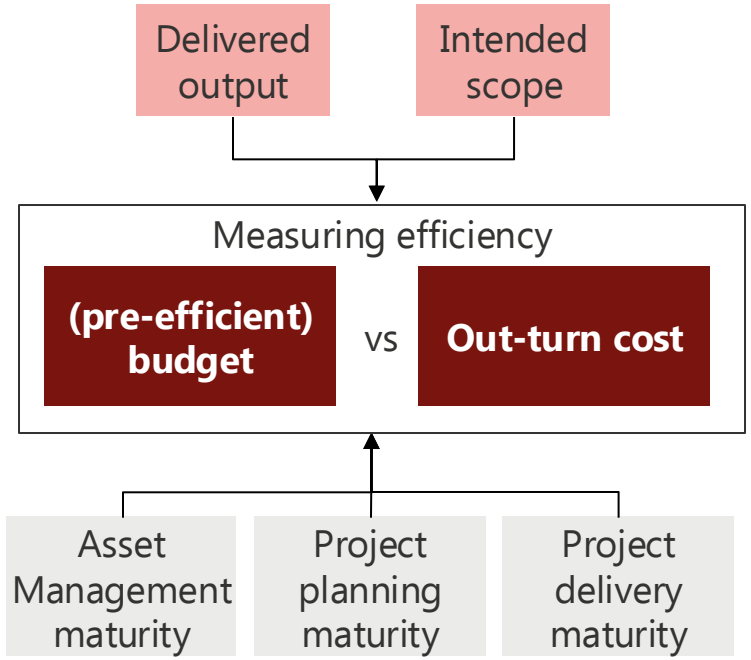
Discussion

- National Highways uses an 'embedded efficiency' approach – as shown in the figure to the left which is taken from the Efficiency and Inflation Monitoring Manual (EIMM)
- Embedded efficiency means that if National Highways delivers the outputs and KPIs envisaged by the RIS, within the post-efficient budget; then the 'embedded efficiency' is counted toward the overall KPI target
- The efficiency target is set for the **end of the Road Period** but National Highways commits to providing annual updates on progress which are assessed by ORR

To accurately assess efficiency, the measurement must separate out all the other factors that can influence out-turn costs

Concept of measuring efficiency

Out-turn cost can be different from budget for a range of reasons *including but not limited to* efficiency



Discussion

- Efficiency is typically defined as the comparison between out-turn costs and an agreed budget, considering the intended scope to be delivered and the ultimate outputs. Any improvement in efficiency under these conditions reflects enhanced organisational capabilities, such as increased asset management maturity
- The graphic on the left side illustrates the concept of efficiency by comparing output to inputs and showcasing the factors involved.
- National Highways has developed the EIMM which outlines how to make these calculations and provide supporting evidence.

ORR commissioned Rebel to (i) evaluate aspects of RIS2 efficiency evidence and (ii) recommend future improvements to the EIMM

We have two distinct but related tasks:

i. Assess the case put forward by National Highways to adjust its efficiency KPI measurement in relation to four specific areas	What has been the impact of 'headwinds' which are factors beyond National Highways' control that **adversely affect** the achievement of efficiency: 1. Covid-19 2. Non-recoverable VAT 3. Are there any 'tailwinds' where National Highways has **benefited** from factors beyond its control? 4. What adjustments are required as a result of **over- and under-delivery** of renewals volumes
ii. Consider ways that the EIMM can be adjusted and improved to better take account of these factors in future	To develop options for improving the efficiency monitoring system as a whole: ▪ What improvements are needed for the headwinds/tailwinds adjustment process in future RPs, including potential updates to the EIMM? ▪ How can we attain greater clarity on renewals efficiency measurement going forward, addressing challenges such as over- / under-delivery?

To answer these questions, the remainder of the report covers the following

1. Framework for measuring efficiency

Purpose:
What are the implications of the four factors we are considering for efficiency measurement

Key steps:
- How does the efficiency calculation work in these cases
- What evidence is needed to make a decision on the actual impact

2. Assess National Highways' proposals

Purpose:
Reach a conclusion on the robustness and reasonableness of NH's proposed approach and its supporting evidence

Key steps:
- Understand where NH is at in its process
- Critically review the proposals and logic vis-à-vis the framework
- Reach conclusions

3. Recommendations on how to update the EIMM

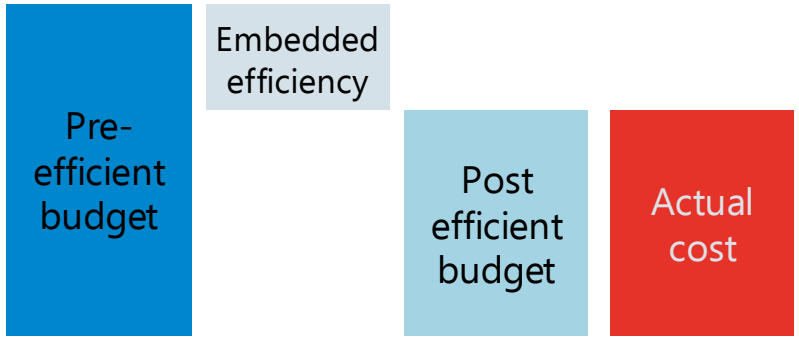
Purpose:
Consider how the EIMM could be amended, identifying the benefits, as well as what would be required to change

Key steps:
- Understand any 'gaps' in the current approach
- Collect evidence about approaches in other sectors
- Consider options to improve and make recommendations about the best approach

2.

Framework for measuring efficiency

This section shows how the specific scenarios we consider complicate the measurement of efficiency



In the simplest case, the principle of embedded efficiency works by saying that if **actual cost** equals the post-efficient budget, **and there has been no change to the volumes, outputs, or other factors** then National Highways can be deemed to have achieved the designated embedded efficiency calculated as part of RIS setting.
As shown on slide 5 these other factors include scope of works, impact on back-log and WLC etc. These factors might have **+ve or –ve impacts**. For example, renewal spend might be lower than budget because a new technology has been developed for longer-lasting interventions. This would be an efficiency. However, actual spend that is lower than budget just because renewal spend has been deferred or the backlog has grown would not be an efficiency.

For each of the four scenarios we are examining:
(i) Headwind covid-19
(ii) Headwind Non-recoverable VAT
(iii) Tailwinds
(iv) Under- or over-delivery of renewal volumes

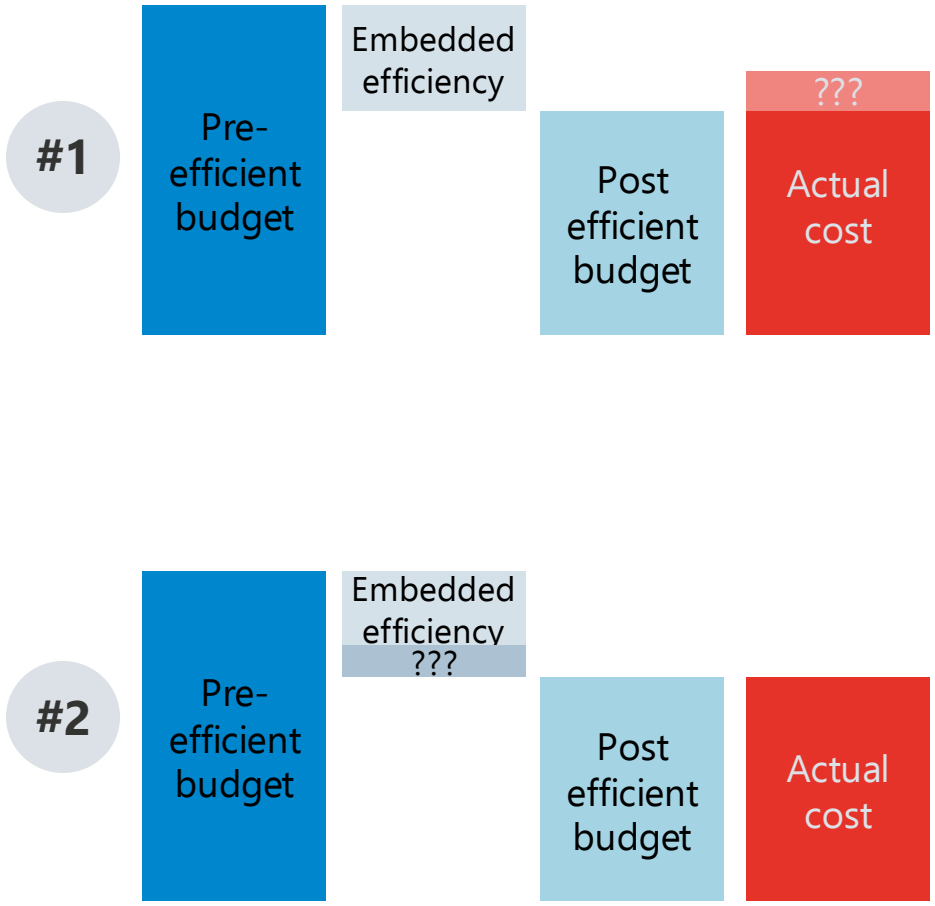
We redraw this diagram to build a framework for analysis

This framework allows us to:

1. Understand the **real impact of the scenario** and how it is likely to impact on the **achievement of the efficiency KPI**

2. Articulate the information we need to **quantify the size of the impact in practice**

(i) National Highways argues that Covid-19 adversely impacted work-practices in a way that caused a net extra cost for completing work



In the event of a 'headwind' which is a material factor beyond the control of National Highways that has an adverse impact on costs, the relationship shown on slide [9] does not hold. There are two main scenarios as shown to the left.

The first, is that **all of the intended outputs & scope have been delivered** but actual costs are higher. The question then is the treatment of the difference between the actual cost and the post-efficient budget. Is that all due to the headwind, or is some 'inefficiency' or another factor?

The second is that **actual cost equals the post efficient budget** but **not all of the intended outputs & scope have been delivered.** The question then arises as to whether the embedded efficiency amount needs to be adjusted

There are five key questions in making the case for covid-19 as a headwind

1. Does the event meet the principles that define whether the event can be consider a 'headwind' – e.g. that it is significant, unexpected and beyond management control?

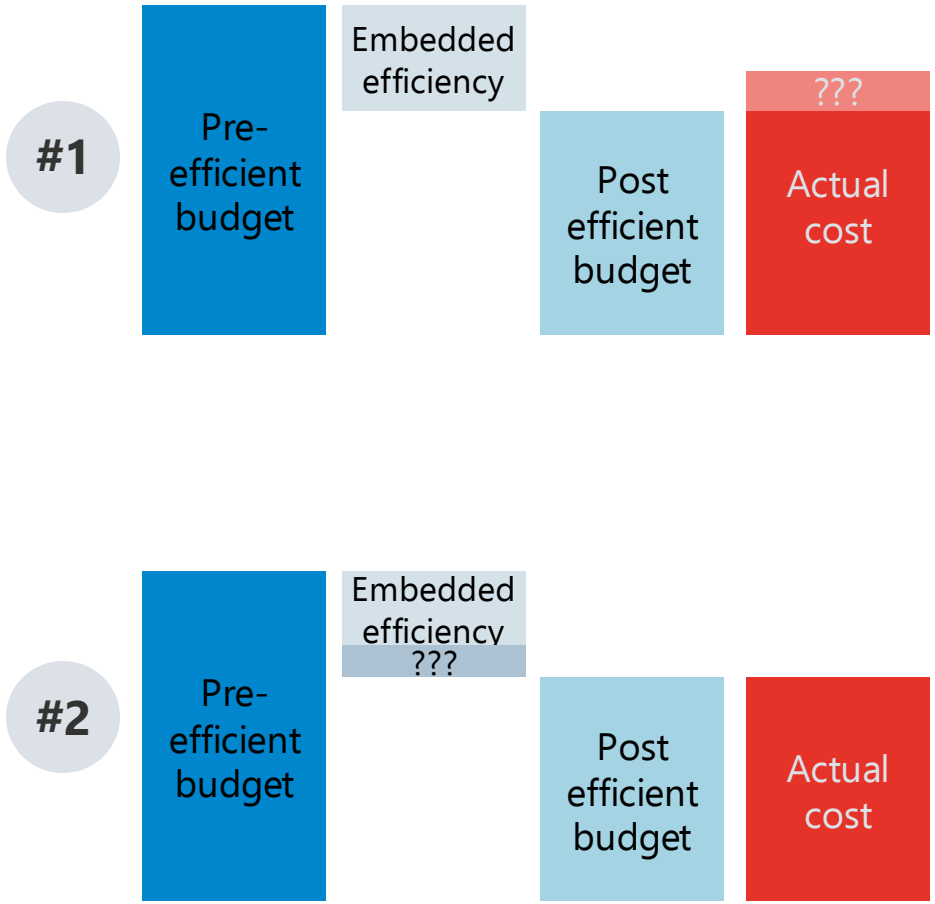
2. What is the size of the actual cost vs the post-efficient budget – i.e. which of the scenarios in the previous slide is relevant?

3. How was any difference funded / financed – and in particular has there been any double-counting? For example, if the CRR has been used to adjust the baseline then a further adjustment for the headwind is not appropriate even if the event meets the test of being a headwind.

4. What is the methodology to isolate the impact of Covid-19 vs other potential cost drivers?

5. Were there any benefits arising that should be netted off? What is the methodology to quantify these?

(ii) National Highways suggests that unforeseen interpretation of VAT rules led to higher 'non-recoverable VAT' which is a cost



National Highways suggests that non-recoverable VAT is also a 'headwind' and hence the scenarios are the same as on page [10]

The first, is that **all of the intended outputs & scope have been delivered** but actual costs are higher. The question then is the treatment of the difference between the actual cost and the post-efficient budget. Is that all due to the headwind, or is some 'inefficiency' or another factor?

The second is that **actual cost equals the post efficient budget** but **not all of the intended outputs & scope have been delivered.** The question then arises as to whether the embedded efficiency amount needs to be adjusted

There are four key questions in making the case for non-recoverable VAT as a headwind

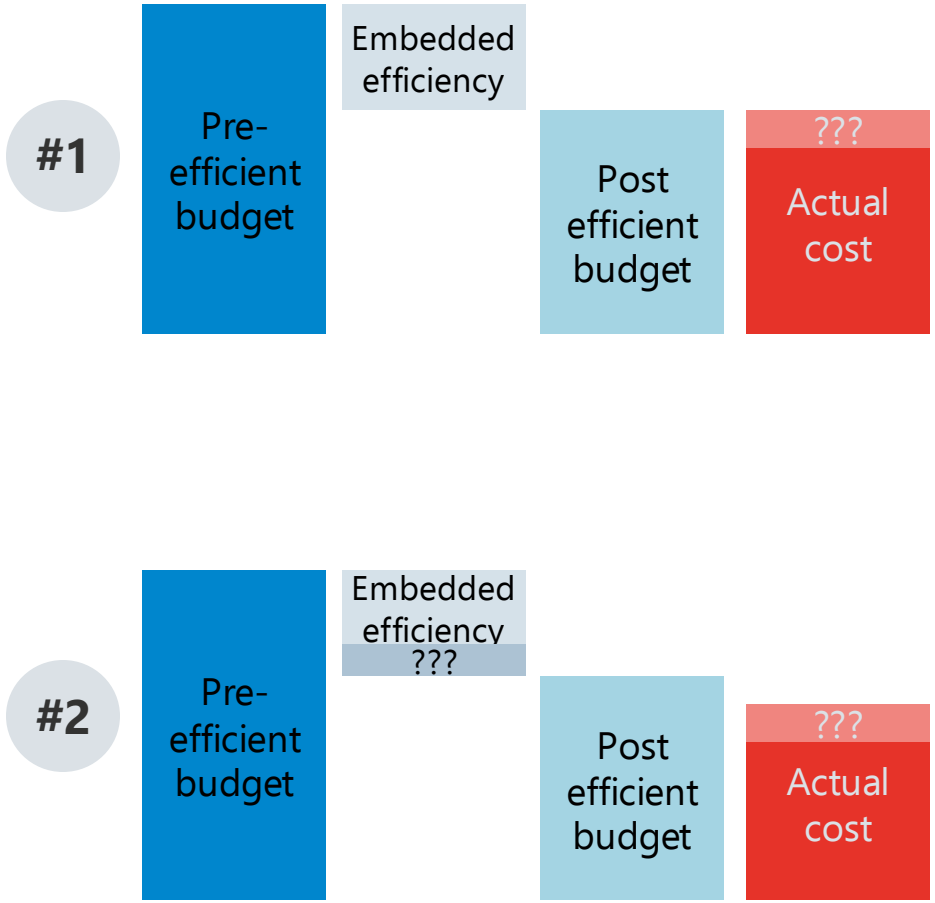
1. Does the event meet the principles that define whether the event can be consider a 'headwind' – e.g. that it is significant, unexpected and beyond management control?

2. What is the size of the actual cost vs the post-efficient budget – i.e. which of the scenarios in the previous slide is relevant?

3. How was any difference funded / financed and has this involved any double-counting or in any other way affected the overall embedded efficiency?

4. What is the methodology to calculate the additional non-recoverable VAT?

(iii) 'Tailwinds' work in the opposite way to headwinds, in that factors beyond management control lead to lower costs



National Highways has not identified any potential tailwinds, and Rebel has been asked to consider whether any factors qualify, taking into account the approach in other relevant sectors. There are two broad scenarios.

The first, is that **all of the intended outputs & scope have been delivered** but actual costs are lower than the post-efficient budget. Without the categorisation as a tailwind, this difference would be taken as additional efficiency. Some of the difference may be efficiency, but the 'tailwind' element needs to be netted out.

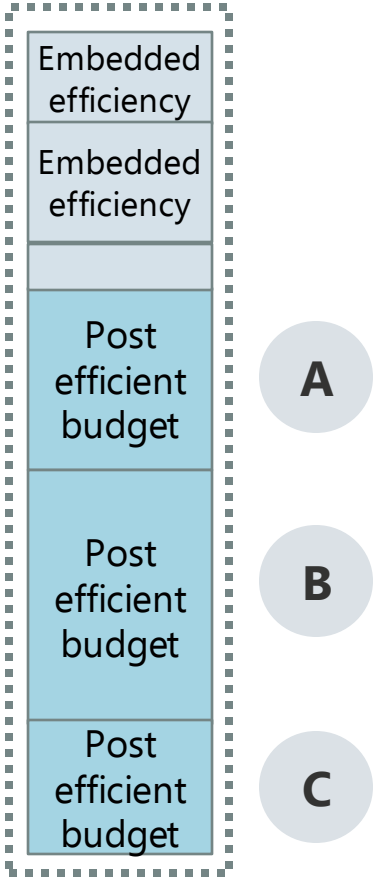
The second is that **actual cost is lower than the post – efficient budget** but **not all of the intended outputs & scope have been delivered.** As well as isolating the impact of the tailwind on actual costs, there is a need to assess whether the embedded efficiency amount needs to be adjusted

There are four key questions in assessing the impact of a tailwind – though for this study the first question is key

1. Does the event meet the test of a 'tailwind' (hurdle threshold) in terms of being beyond management control, and being a material benefit?
2. What is the size of the actual cost vs the post-efficient budget – i.e. which of the scenarios in the previous slide is relevant?
3. How was any additional money used – and does any additional efficiency accrue as a result?
4. What is the methodology to isolate the 'tailwind' from all other cost-drivers?

(iv) The actual costs and volumes of renewals may differ from planned - these differences need to be valued to calculate the impact

The approach for renewals is represented in this diagram – as long as National Highways is within the **total** budget for the renewal items it can claim the **total embedded efficiency**. The areas of spend are taken together, NOT treated on an individual basis. This provides considerable additional flexibility for National Highways.



Under the embedded efficiency approach, the renewal spend in each of the individual asset categories – identified by A, B, C in the diagram to the left all form part of the overall set of outputs and budget. If all the outputs are delivered and National Highways is within the overall budget, the embedded efficiency can be claimed toward the overall efficiency KPI target.

For National Highways, there are **5 categories of asset renewal** that form part of this analysis: asphalt pavement, concrete pavement, steel VRS, concrete VRS, and significant structures. Each has a designated volume of assets to be delivered during the RP.

In practice, **actual volumes and costs are unlikely to exactly match the post-efficient budget**. There is a range of possibilities with the most likely being over delivery and cost; and under delivery and cost. Though it is theoretically possible that there is over delivery and under cost; and vice-versa. There are a number of calculations that need to be undertaken to see what the net effect is – for example **is the extra volume in line with the extra cost bearing in mind the underlying embedded efficiency approach?**

There are five key questions to help work out the net impact of over- and under-delivery of renewals

1. What are the actual costs and volumes delivered vs the funded volumes and costs?

2. How can the over- or under-spend be valued? That is, what 'unit cost' should be used to translate additional spend into the equivalent volumes

3. What are the effective 'efficiency rates' for each of the different asset groups – or are they all the same? By efficiency rate we mean the embedded efficiency as a percentage of the funded costs. This is important to translate the out-turn into the impact on the overall embedded efficiency and hence the efficiency KPI. For example, if there was significant over-delivery of a renewal with a low efficiency rate and under-delivery of renewal with high efficiency rate then this may impact the overall calculation.

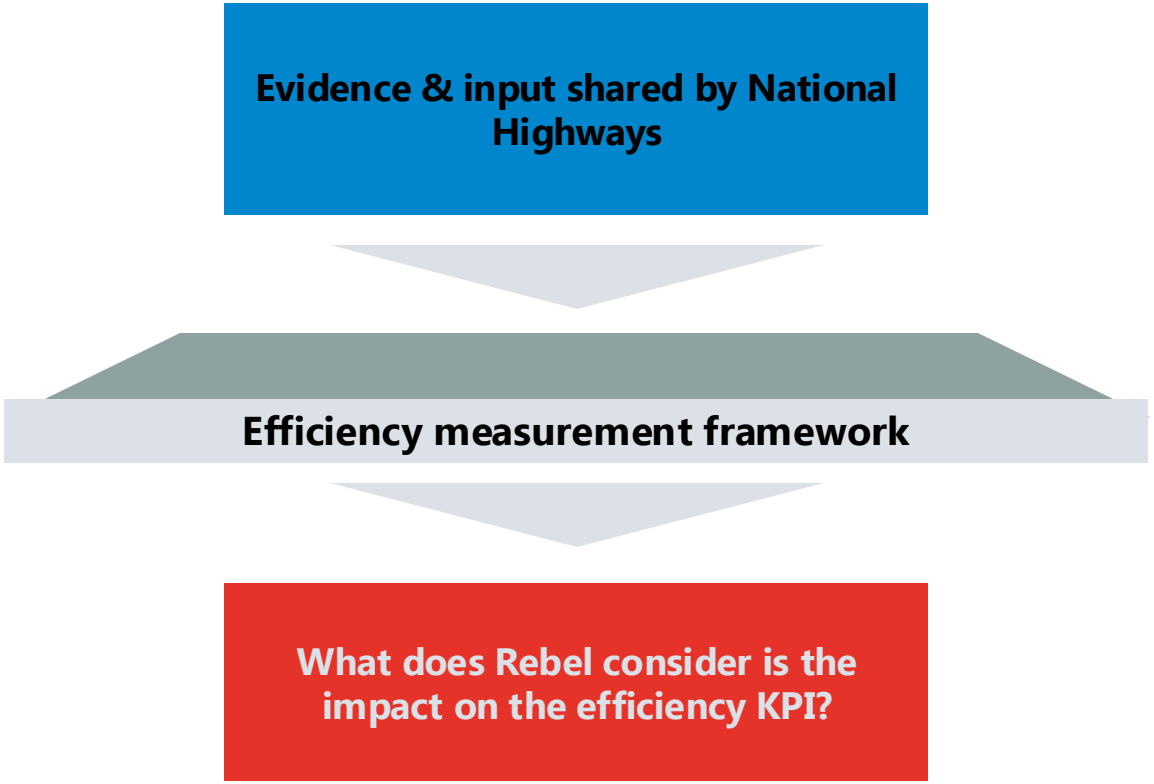
4. If the overall actual costs are higher than budget, how is this financed / funded and are there any knock-on impacts?

5. What is the approach where it is difficult to track out-turn volumes? This is an issue for structures as the precise intervention was not known ahead of time.

3.

Assessment of National Highways RP2 out-turn efficiency evidence

In this section we assess the evidence presented by National Highways using the framework developed in the previous section

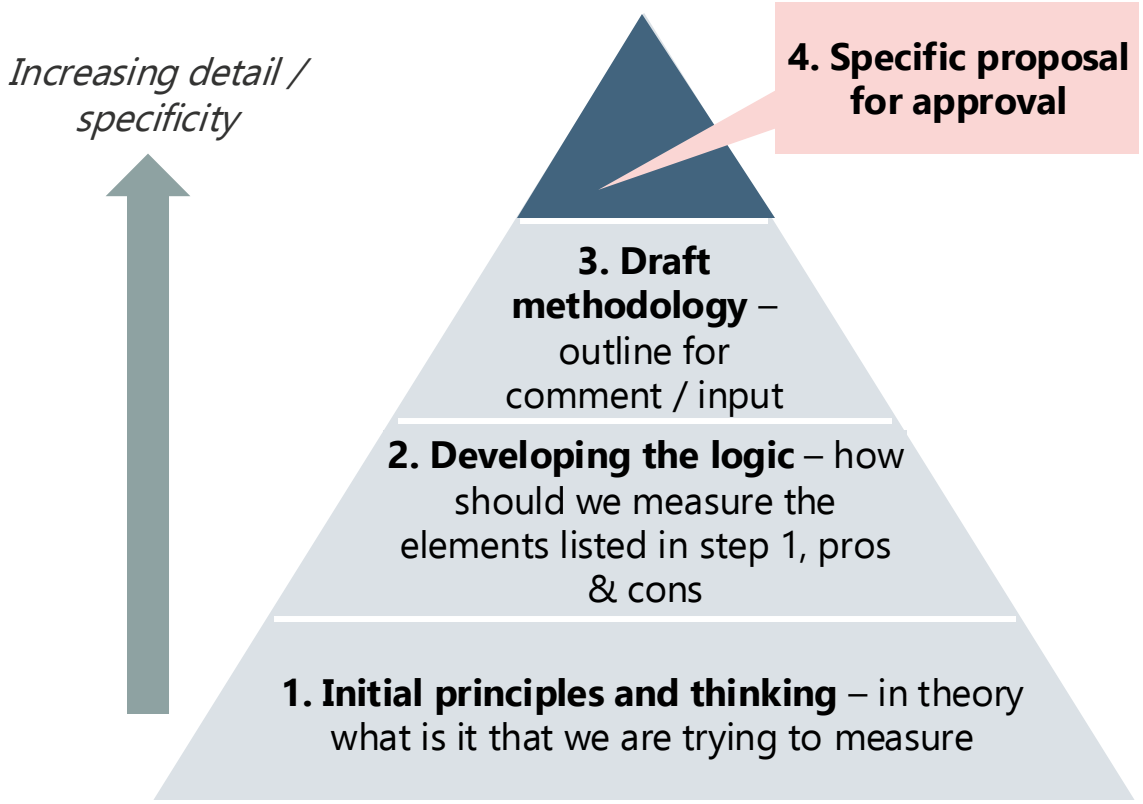


Discussion

- The purpose of developing the efficiency measurement framework in the previous section was to highlight the evidence – *in principle* – that National Highways would need to present
- We developed a number of questions specific to each of the four categories of efficiency evidence that we have asked to consider
- We set out the answers to these questions and form our view on the conclusions and implications for the efficiency KPI
- The evaluation has been complicated because National Highways is not able to set out a **firm final proposal** for consideration
- In the next slide, we therefore develop a framework for dealing with this

The analysis and assessment we are able to undertake depends on the detail within the proposal

Steps in the development of specific proposal



Discussion

- Efficiency is a target set for the end of the Road Period, requiring ongoing efforts. National Highways pledges to continuously evaluate progress against KPIs, with ORR formally reviewing this annually.
- While stages 1 and 2 are straightforward, stages 3 and 4 prompt action. Rather than reaching final conclusions, we assess work-in-progress and detail the necessary steps for a strong proposal.
- This means that instead of making a final conclusion on the impact of the particular issue on the efficiency KPI – we are making an assessment of work-in-progress, and we therefore set out our thoughts on what steps are required to develop a robust specific proposal for approval

The remainder of this section assesses the four areas of efficiency evidence in turn, using the framework set out in section 2

Discussion

As set out above, we cover the following areas of interest:

1. Covid-19 (potential headwind)
2. Non-recoverable VAT (potential headwind)
3. Assessment of tailwinds
4. Renewals over- and under-delivery (impact)

We have drawn on information provided by National Highways and ORR, as well as other publicly available data coupled with our own analysis. We supplemented this with a number of interviews and discussions. We are grateful for the professionalism and assistance provided by National Highways colleagues.

We have tailored the analysis to the particular issue at hand, as well as how far National Highways has progressed its own thinking.

For each of the four areas we cover:

An assessment of the relevant principles (e.g. does it meet the test of a 'headwind')

Assessment of National Highway's methodology & approach to quantifying the impact

Recommended steps for National Highways final proposal. This is key given current thinking is at an early stage

3.1

Impacts of Covid-19

We agree with National Highway's analysis that covid-19 in principle represents a headwind

Principles that need to be met for consideration of any adjustment

Developed by National Highways

Principles	Rebel commentary / discussion
Timing – is post settlement of the RIS	Covid-19 hit in early 2020, occurring after the settlement and during the delivery of RIS2.
Efficiency impact is material, **value** must be more than £10/20m	This cannot be absolutely proven until the final submission, but given the nature of the disruption to work sites and ways of working, it seems plausible that covid-19 exceeds this materiality threshold. The materiality threshold is a small percentage of the total OMR spent across RIS2. This also aligns with our understanding that covid-19 has had a material impact for Rijkswaterstaat and Network Rail.
The driver must have been created **externally**	Covid-19 clearly originated outside of National Highways and the nature of the virus is clearly beyond NH control. We would add to the principles that NH also needs to demonstrate that it has done *everything reasonably within its control* to mitigate the impacts.
Is **beyond NH reasonable control** or expectation	
Not within scope of **Central Risk Reserve (CRR)**	There is some debate about what CRR covers[1]. However, our understanding is that it was not intended to cover 'unknown unknowns' which is effectively what a headwind represents. The CRR was not sized / scoped to take into account covid-19

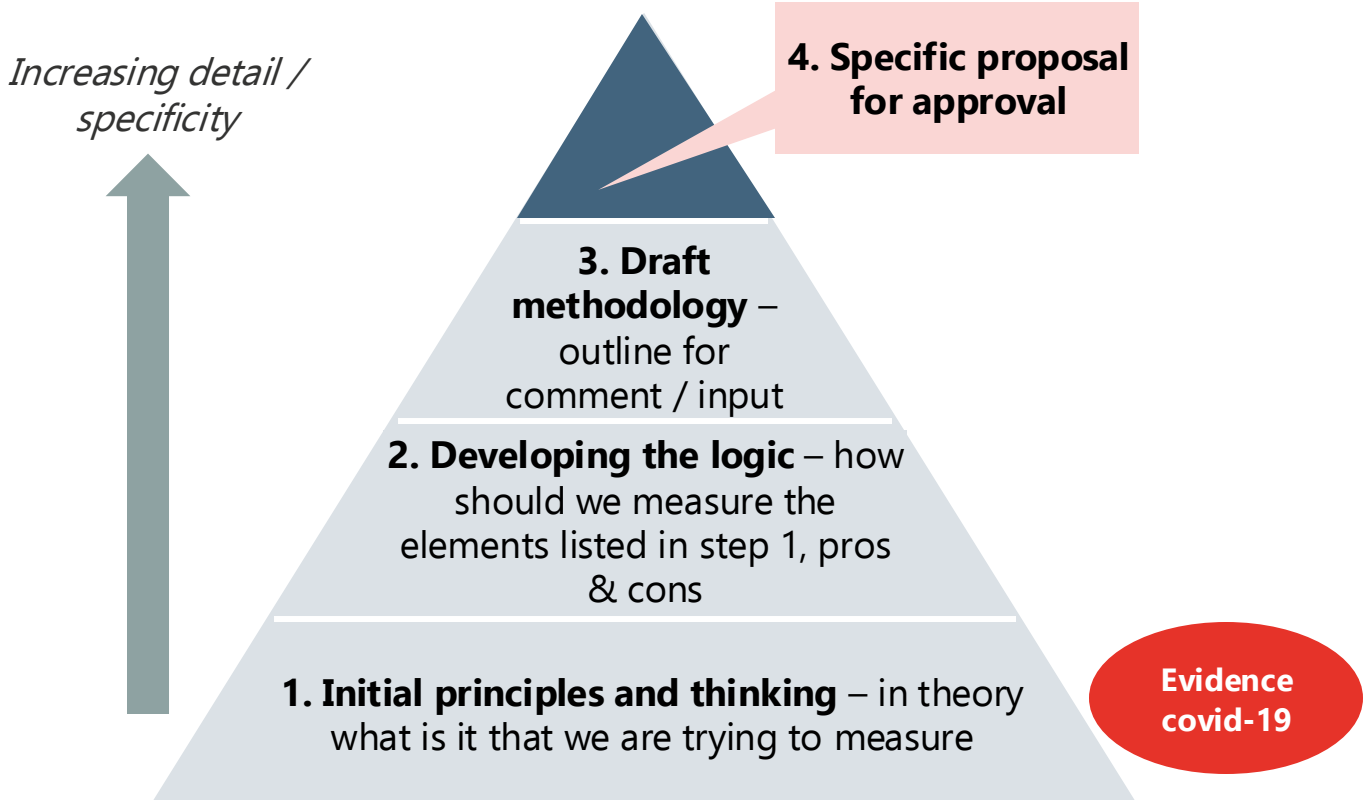
[1] see the CEPA 2022 report to ORR covering the use of CRR: https://www.orr.gov.uk/media/23530

Discussion

- We consider that the principles adopted by National Highways are effective in assessing whether a particular event qualifies as a headwind. We have also noted that quantification does need to show that National Highways has done everything reasonably within its power to mitigate the effects, even if the origin is completely beyond its control
- We consider that **covid-19 represents a headwind**, though the materiality remains a slight caveat until the final proposal

Despite covid restrictions having been lifted some time ago (>2 years), National Highways is at a very early stage of analysis

Steps in the development of specific proposal



Discussion

- Based on the information presented to us in discussions we consider that National Highways is at Stage 1 of our framework.
- It is understood that work has been developed internally but at this stage the publicly released information is at the stage of principles and initial thinking.
- We are therefore assessing the work in progress with a particular emphasis on what is necessary to develop a firm final proposal.

National Highways has identified different factors that are likely to have increased costs, as well as some potential benefits

Factors highlighted by National Highways

Identified impacts in terms of work-practices across OMR & E activities arising from social distancing requirements. Impacted on how to get to site and work at site

Highlighted some other top-down studies / surveys quoting average cost impacts across UK construction projects as a result of covid-19

Identified potential offsetting benefits (e.g. better access to do works with less traffic, reduced PFI payments). Indicative order of magnitude estimates shared internally with ORR

- To some extent, the delay in analysis from National Highways has been driven by initial public statements suggesting that any additional costs may be balanced by the additional benefits. This view has since been challenged and is now under more detailed investigation
- The top-down studies do not, in our view, provide sufficient evidence to justify an adjustment. Further work is necessary
- We understand the sensitivities, but we consider that National Highways is substantially behind the timing of where it should be. The delay will make evidencing any claim more difficult, particularly considering it is several years after the event, and the case is likely to rely, in part, on the claims of contractors

National Highways has considerable work to undertake to present a robust estimate isolating the impact of covid-19

We expect the input will cover bottom-up and top-down analysis, and canvass both the –ve and +ve impacts

Bottom-up

-ve

Labour shortages: assessing changes in workforce availability, resulting from covid-19-related factors such as illness and quarantine requirements.

Project delays: review project timelines and schedules to identify delays or disruptions and list changes in working methods like social distance, supply chain interruptions, or workforce limitations

Budget adjustments: analysing changes in budget allocations or expenditures related to covid-19 mitigation measures, such as increased spend on health and safety protocols and IT infrastructure

+ve

Operational efficiency: examine a subset of schemes to assess if extending working windows was possible due to changes in traffic patterns. This could be a possible tailwind for National Highways.

Top-down

Benchmarking: comparing National Highways' performance with those of similar organisations within the infrastructure sector to identify trends attributable to the covid-19 pandemic.

For each piece of analysis we expect the following:

- A methodology for isolating the impact of covid-19 from other possible sources of increased (or decreased) cost
- Method of aggregation from a small number of projects – how is it established that they are a reasonable and representative sample?
- Use of a range of benchmarks and a test for what is a reasonable representation to be
- Actual evidence from contractor claims – again with analysis around how the covid-19 impacts have been isolated
- A sense of how any additional costs have been paid for, including where CRR has been used, and whether that causes any flow-through impacts (e.g. taken money away from other budgets leading to underperformance / delivery) that would not be identified through any other process in place
- Set out a methodology that quantifies the ultimate impact on the KPI and/or any other adjustment that should be made
- Demonstrate that the total impact of covid-19 passes the materiality test of £10/20m

3.2

Impacts of non-recoverable VAT

It is helpful to start by understanding the nature of VAT that is and is not recoverable by National Highways

Discussion

VAT is paid on most goods and services by both individual consumers and businesses. For a business, VAT that they pay on goods and services can be recovered through the VAT that is added to the goods and services that they sell to market. Like many public sector organisations that receive public funding – National Highways does not sell any goods and services. It is still required to pay VAT on most activities so as to avoid distorting the arrangements in downstream markets.

Public Sector organisations are able to recover VAT under the Contracted-out Services (COS) rules with the VAT legislation. Under the Contracted-Out Service (COS) Heading 52: Professional advice, National Highways has historically fully recovered VAT of advisory services on projects up to the construction phase.

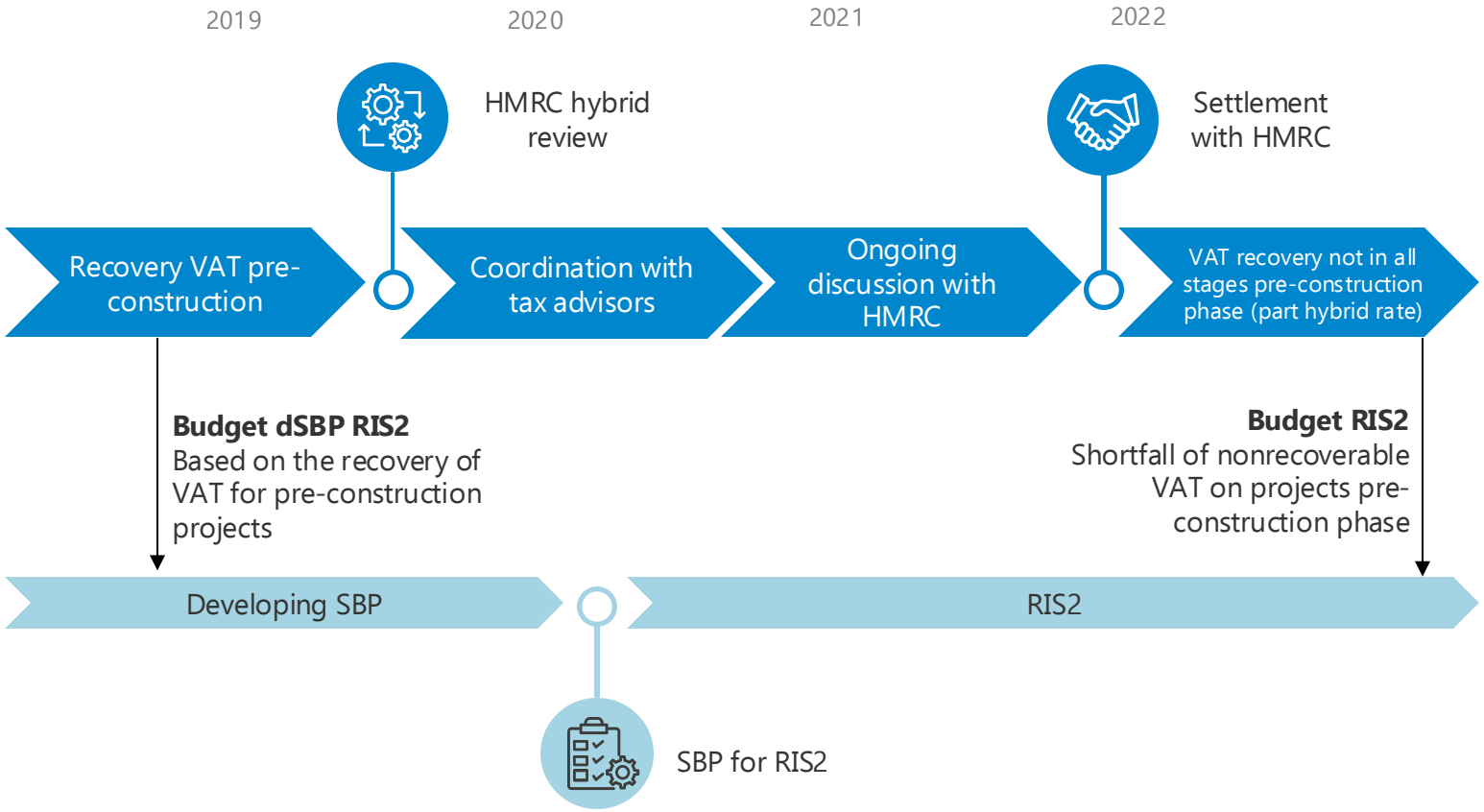
Within each 5-year Road Period National Highways therefore has an estimate of:

- VAT spend that will be **recoverable,** and the process for having this reimbursed

- VAT spend that is **non-recoverable**, which is then explicitly part of the budget requirements that National Highways includes in the business plan and ultimately in the RIS

National Highways considers that changes in the HMRC interpretation of some activities represents a headwind

Timeline provided by National Highways on unrecoverable VAT



Discussion

- National Highways explained that in 2019 HMRC was in a compliance check on the hybrid rate calculation related to the Regional Delivery Partnership (RDP).
- With the advice of external tax advisors, National Highways built the case for the assumption of the existing rate. National Highways remained confident in the appropriate application of the rules.
- However, ongoing correspondence led National Highways to realise persuading HMRC was unlikely.
- In 2022, National Highways eventually settled with HRMC on nonrecoverable VAT.

National Highways has demonstrated that nonrecoverable VAT was beyond its reasonable control and is in principle a headwind

Principles that need to be met for consideration of any adjustment

Developed by National Highways

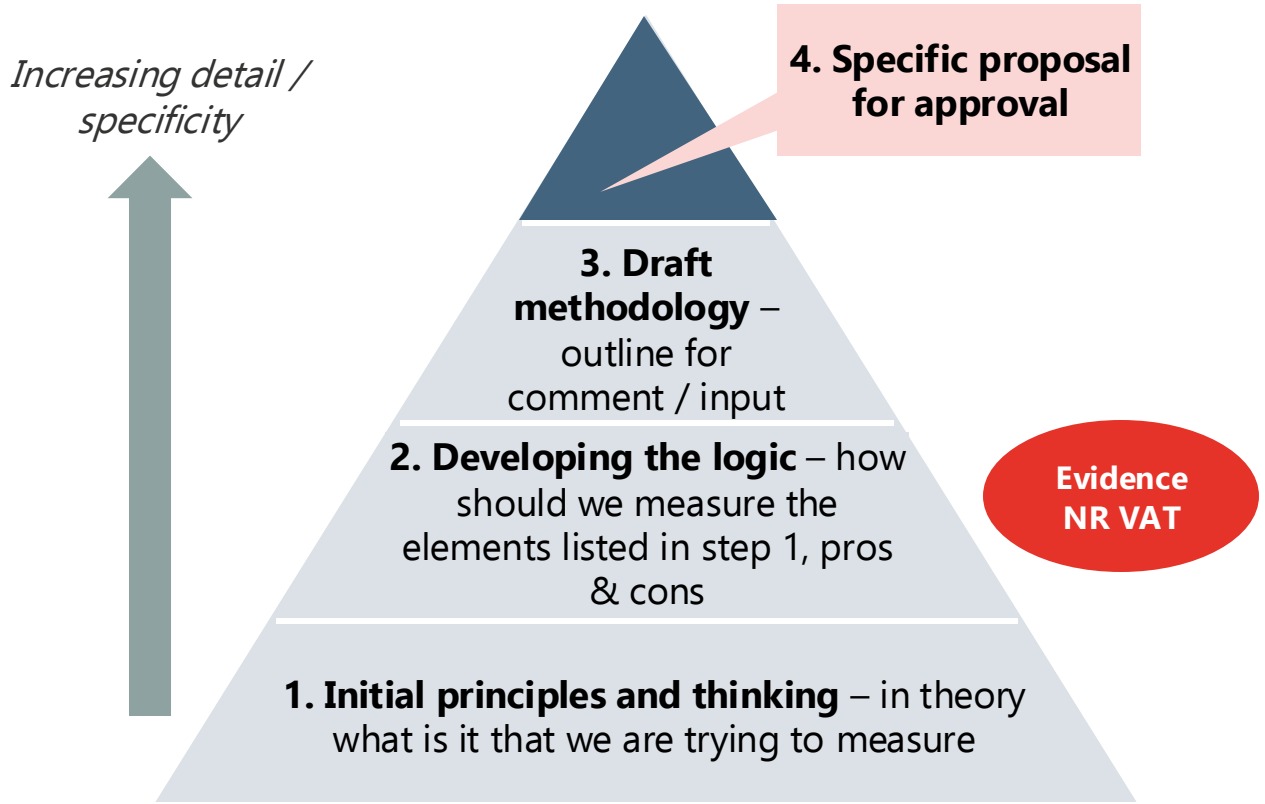
Principles	Comment Rebel for NR VAT
Timing – is post settlement of the RIS	NH elaborated on the NR VAT case during the interview, explaining the change in HMRC's interpretation of COS52. The presented timeline seems logical to us.
Efficiency impact is material, **value** must be more than £10/20m	There is no final number on the impact of NR VAT has been presented. However, we understand that the has been a settlement with HMRC that is tens of millions, indicating that there is a material impact of more than £10/20m in RIS2.
The driver must have been created **externally**	Our analysis suggests that the shift in interpretation by HMRC represents an external factor influencing National Highways. In response to this challenge, National Highways displayed proactive efforts by seeking external tax advice and meticulously constructing a case to convince HMRC of its compliance with VAT recovery regulations. We believe that these actions undertaken by National Highways seem sufficient and are outside its reasonable control.
Is **beyond NH reasonable control** or expectation	
Not within scope of **CRR**	In principle, the CRR should only be used for events known in advance of setting out the funding for RIS2 but whose impacts are uncertain. NR VAT was a recognised risk when drafting the RIS2 dSBP. However, National Highways assumed that VAT would continue to be reclaimed on the same basis as in RP1 (i.e. no significant changes to HMRC rules on VAT recovery), and therefore does not fall within the scope of the CRR.

Discussion

- We have assessed the principles that are set out by National Highways to determine if nonrecoverable VAT qualifies as a headwind.
- Based on the analysis set out in the table to the left, we consider that **NR VAT is in principle a headwind**
- However, to substantiate the claim that it is beyond management control and that reasonable measures have been taken to minimise the cost impact, we expect National Highways to provide documentation, such as records of the tax advice received to support its viewpoint of compliance with VAT regulations.

National Highways has developed the logic of how NR VAT can be valued, with an internal understanding of the methodology

Steps in the development of specific proposal



Discussion

- National Highways has not yet developed a final proposal for NR VAT so we are assessing the work undertaken to-date.
- The evidence for nonrecoverable VAT is at the **step of developing the logic** for quantifying the impact. In the next steps, we expect National Highways to provide detailed documentation regarding the methodology of measuring the impact.
- Additionally, we expect more detailed documentation to support the claim that non-recoverable VAT is a headwind.

The logic of how to calculate the impact of NR VAT appears clear and well understood

Historically, VAT was recovered under the Contracting Out Services (COS) rules, allowing full VAT recovery on major projects up to the construction phase. However, HMRC now deems this approach inappropriate due to the lack of a clear delineation between the development and construction phases of the RDP programme. This blurring of phases prevents full VAT recovery in the pre-construction stages, as per HMRC's opinion. Consequently, the hybrid rate now applies to both the pre-construction (stage 1-5) and construction phases (stage 6), rather than solely the construction phase. Meaning that National Highways can't fully recover VAT in the pre-construction phase, resulting in lower than expected VAT recovery.

Discussion

- National Highways has presented information on the logic of quantifying the impact of non-recoverable VAT. However, National Highways is still in the phase of setting out the approach and documentation on the quantification hasn't been shared.
- **Clearly the final proposal needs to set out the full detail of how this calculation is made**
- On the next slide, we set out the steps that should be followed to determine the calculation for non-recoverable VAT.

*Bars in the graphic are not to scale

To quantify the impact of non-recoverable VAT, National Highways should demonstrate the following 5 steps in its final proposal

1. **Identify scope/ projects**
   - Determine the scope of spending affected by the interpretation change.
   - Identify projects delivered by National Highways that are now ineligible for VAT claims for the pre-construction phases (1-5).
   - Exclude projects that are still in the budgeting phase.
2. **Determine hybrid rate**
   Calculate the hybrid VAT recovery rate for a subset of projects:
   - Assess which services within a project are eligible for VAT recovery and determine the corresponding percentages of that spending.
   - Seek guidance from tax advisors to ensure compliance with the VAT rules, especially in cases where contractors may not provide detailed breakdowns of their work.
3. **Calculate overall impact**
   Multiply the hybrid rate by the project spending affected by the interpretation change.
4. **Analyse budget utilisation**
   - Demonstrate how the budget allocated for nonrecoverable VAT is currently utilised.
   - Identify any shortfalls resulting from the interpretation change and determine how they are funded.
5. **Address impact on efficiency KPI**
   This step depends on how this headwind has impacted measuring efficiency and how NR VAT is currently funded, as shown on slide 12:
   - If all intended outputs and scope are delivered but costs exceed the initial budget (#1), assess additional funding sources.
   - If costs align with the post-efficient budget but not all intended outputs are achieved (#2), consider adjusting the efficiency KPI accordingly.

3.3

Assessment of potential tailwinds

For completeness, we need to examine whether National Highways has *benefited* from factors beyond its control – a 'tailwind'

Context & purpose

- A tailwind refers to an external factor that beyond management's control that has a positive impact on the business. It is therefore the converse of a headwind which we looked at in previous sections.
- In terms of efficiency measurement, it is important to adjust for tailwinds otherwise efficiency (and/or performance) may potentially be over-stated
- National Highways has not declared any tailwinds and Rebel has been asked to consider whether there are any factors that qualify as a tailwind
- We have therefore considered the sorts of changes that might be tailwinds, assessed whether these have been in evidence in RP2 for National Highways, and reviewed the approach in other sectors to gain insights

Potential tailwinds include the following categories:

- **Change in legislation / regulations** – where these have happened after finalisation of the funding arrangements AND the effects could not have been foreseen
- **Macroeconomic impacts** – for example changes in growth or other factors that drive costs within the business For example – shocks that drive energy prices lower than expected (the reverse has been part of the headwind). Inflation is a headwind and this is an example of a macroeconomic impact
- **Unexpected new technology** – that changes the efficiency of activities or other duties of National Highways. In practice it is unlikely that technology would emerge and be adopted so rapidly that it would constitute a tailwind

We have undertaken a focused review of documents across a number of sectors to identify potential tailwinds

UK energy & water sector

We conducted desktop research by analysing the annual reports and business plans of organisations in the rail, gas, electricity, and water sectors. We looked at the documents from both the regulated companies as well as the regulators.

For the Water sector, these included

- Ofwat: PR24 and beyond: Creating tomorrow, together
- PR24 Business Plans and Annual reports of 2023 for Portsmouth Water, Thames Water and South East Water

For the Energy sector, these included:

- Ofgem: RIIO-ED2 Business Plan Guidance
- England & Wales Strategic Business Plan Control Period 7
- RIIO-ED2 Business Plan and Annual Report 2022-23 for National Grid and SP Energy Networks

We did not find any reference to tailwinds in this analysis.

Rijkswaterstaat (Netherlands)

The equivalent process in the Netherlands to establish the budget for Rijkswaterstaat (the roads and waterways authority in the Netherlands) identified a number of drivers of efficiency such as new technologies and work practices, but none that equate to the definition of a 'tailwind' in the National Highways context

Network Rail

- For CP6, Network Rail reported Covid-19 as a headwind increased Network Rail's costs by over £275m, partially offset by tailwinds of approximately £50m, particularly from reduced travel-related expenses.
- For CP7, no assumed tailwinds are included in Network Rail's SBP. However, a potential tailwind was noted from the lagged impact of inflation affecting costs, impacting Network Rail's exit position in CP6 and input price assumptions in CP7.
- ***The main tailwinds identified consist of pandemic-related savings and pay awards falling below CPI inflation. While these benefits are not novel and National Highways is already aware of them, it's crucial to emphasise the necessity of offsetting them against the challenges posed by headwinds.***

We have not identified any tailwinds that warrant an adjustment in RP2 beyond the covid-19 factors already identified

Our conclusions from each of the areas of our analysis

i. No tailwinds have been recognised across a wide number of other sectors by either the regulated parties or the regulators themselves. It is of course highly likely that in practice the

ii. Network Rail and ORR has recognised some benefits of covid-19 as a tailwind. The treatment has been to net this off the headwind costs. We support this approach which is also the plan for National Highways

iii. For our own independent analysis, there seems some possibility that the cancellation of HS2 may free up contractor / construction resource which may lead to reduced rates. However, this is unlikely to come on stream as part of RP2 but might be considered as part of the RIS3 planning

3.4

Analysing the impact of over- and under-delivery of renewals

This section assesses National Highways' methodology in adjusting for renewals over- or under-delivery

Context & purpose

- Renewals are a critical component of spend both in terms of size (circa £4bn in RP2) and strategic value – replacing the ageing infrastructure to continue to underpin the outputs of the SRN
- The concept of embedded efficiency is based on achieving the ***'overall volumes within the available budget, while meeting the defined outputs'***. Outputs will be in terms of KPIs / PIs / other measures are appropriate
- In practice it is unlikely that the budgeted volumes will be exactly delivered, and there may also be variation in actual costs vs the post-efficient budget. These differences need to be **costed so that the out-turn volumes and costs can be reconciled to the budget numbers**. This enables a view to be taken on whether the full embedded efficiency allocation can be claimed

Asset type	Unit of measure	RP2 volume
Asphalt pavement	Lane kilometres (ln.km)	7,500
Concrete pavement	Lane kilometres (ln.km)	125
Steel RRS	Linear metres (lin.m)	1,540,000
Concrete RRS	Linear metres (lin.m)	80,000
Significant structures	Number (no.)	170

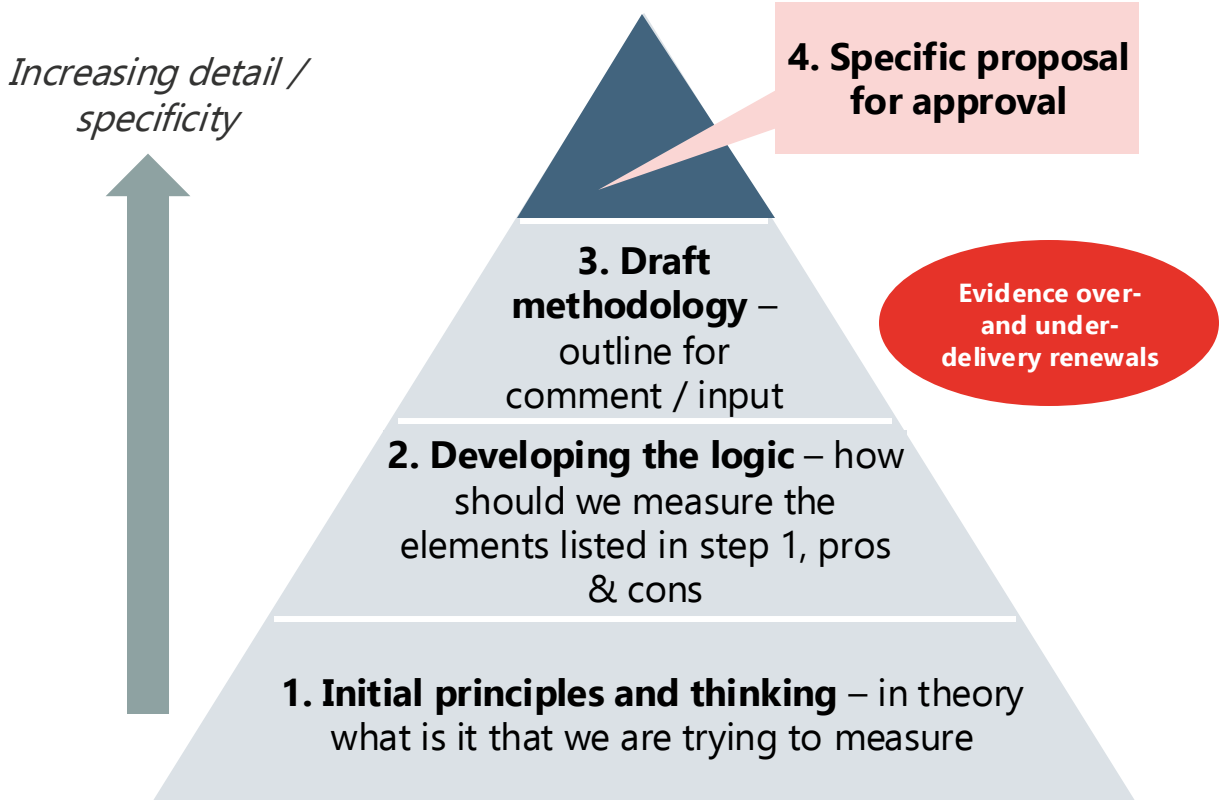
For EIMM purposes, five of the renewal asset classes are tracked representing 75% of the spend. These asset types, along with the committed volumes for RP2 are set out in the table above. The other 15 asset types are placed in the assurance category.

No specific budget breakdown is provided for each of the asset types, and it is difficult to get a definitive figure for renewals overall as different documents present the numbers in different ways.

Following slides cover:
- Approach to adjustment for asphalt pavement
- Approach to other adjustments
- Overall assessment & conclusions

National Highways has undertaken considerable work and analysis to set out a draft methodology for comment

Steps in the development of specific proposal



Discussion

- Out of the areas covered by this report, the treatment of over- and/or under-renewal delivery is by far the most advanced
- The problem statements have been identified and an approach developed to address them
- We have set out our commentary and view on the proposed methodology, as well as highlighted some other questions and tasks that we consider should be addressed in the development of the final proposal

The following slides summarise our understanding and commentary on the four key steps of the methodology

1. **Create a new baseline for the pavement depth in RP2**– the pavement depth originally set out in the RIS2 plans turns out to be erroneous. This matters as it was intended to be 7mm deeper (on average) for RP2 as compared to RP1. This first step aims to identify what the true basis of RIS2 should have been
2. **Assess the pavement depth actually delivered** – to the extent there has been over- or under-delivery this needs to be part of the adjustment process
3. **Value the difference in depth actually delivered** – effectively generate a unit price that allows for this delta to be converted into a value which can then be used as part of any efficiency adjustment
4. **For the five key assets, identify a means of valuing the difference in volume delivered** – identify a unit price that can be used to value any difference in out-turn volume compared to planned, again for the purposes of any efficiency adjustment.

The first three of the steps deal with the quite specific case of the 'depth' of asphalt pavement

The challenge

- In RIS2 National Highways set out its intent to deliver greater depth of asphalt pavement renewals as this was seen to be best WLC outcome. This is important as the **volume of total material** is the driver of project costs
- For RIS2 this was reported to be an extra **7mm of depth** – from 46 (the supposed RP1 benchmark) to 53mm for RP2.
- It has subsequently been identified that these numbers are erroneous – 46mm is not in fact what was being delivered in RP1 meaning that 53mm could no longer be used as the baseline for RP2

- National Highways has invested considerable time in analysing what has in fact been delivered and proposing new baselines that can form the basis of the RP2 cost plan. What NH has set out to do is:
  - Understand what depth was actually delivered in RP1. This effectively replaces the 46mm as the baseline for RP1, which in turn implies a figure 7mm deeper is the baseline for RP2
  - What depth has been delivered to-date in RP2 and is this higher or lower than the newly developed baseline
  - What £ figure should be used to adjust for any difference in actual depth vs the planned / baseline figure?

Questions & our approach

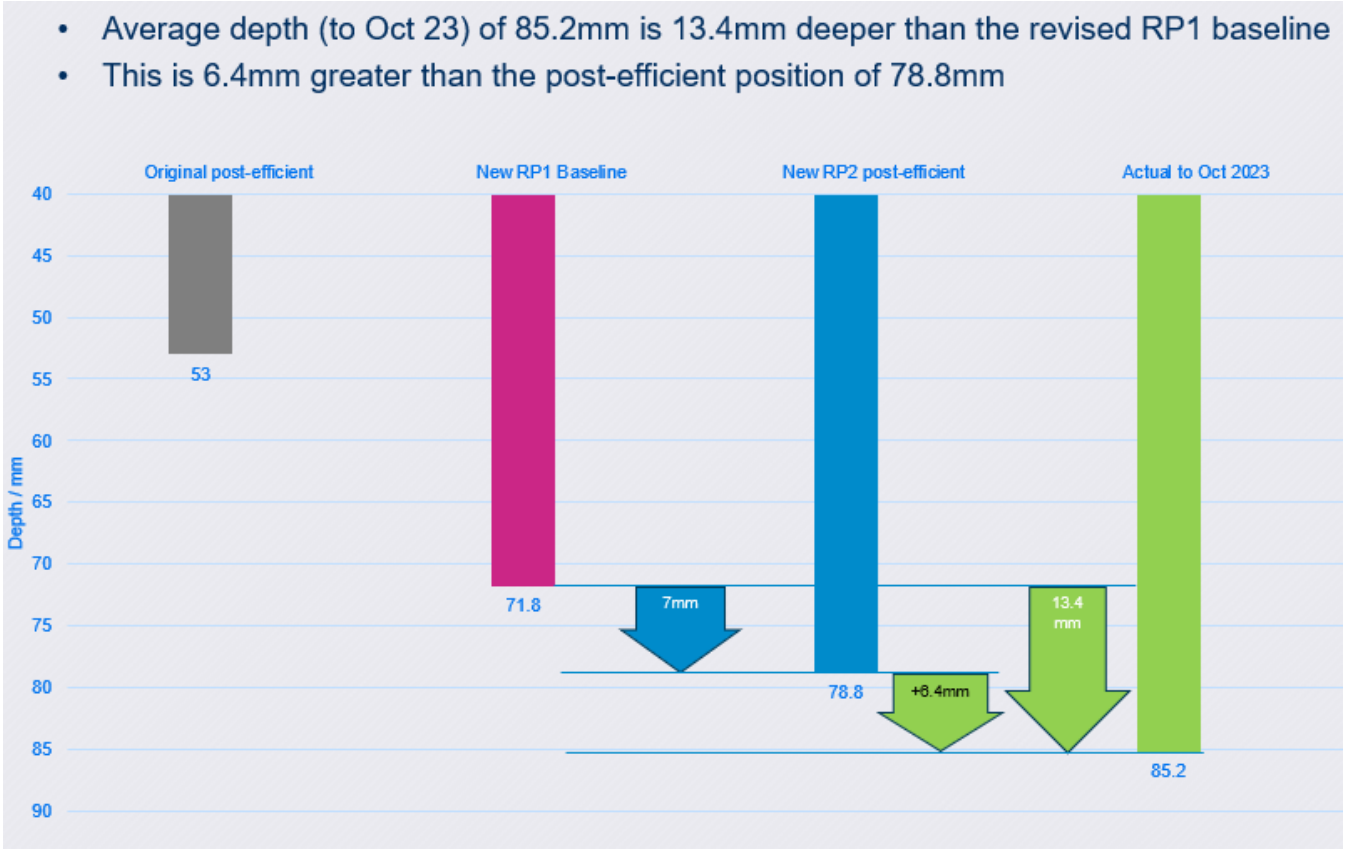
The main questions for our analysis are:

- Is the methodology used to recreate the RP1 baseline reasonable and appropriate?
- Is the methodology used to determine the depth currently being delivered in RP2 reasonable and appropriate?
- Does it make sense that the RP2 post-efficient baseline can be generated by adding 7mm depth to the recreated RP1 figure? Or are other methodologies / approaches available?
- Is the approach to quantifying the cost of different depths appropriate?

National Highways has used its project databases to make calculations for asphalt pavement depth in RP1 and in RP2

Approach

- National Highways has interrogated its database (was HAPMS, now P-AMS) which is populated with all pavement projects
- This is using the data which form a key part of payment to contractors – given they are paid by volume – and hence it is seen to be reliable and accurate. This makes sense to us but we have not independently interrogated the database
- National Highways has made reasonable adjustments to exclude a small number of outliers and calculated the average pavement depth for RP1 and to-date within RP2
- They have also calculated the new RP2 post-efficient baseline by adding 7mm to the calculated RP1 average depth
- The upshot of these calculations is shown in the diagram to the right



Source: National Highways analysis

We consider the National Highways approach to be a reasonable basis for recreating the RP2 pavement depth baseline

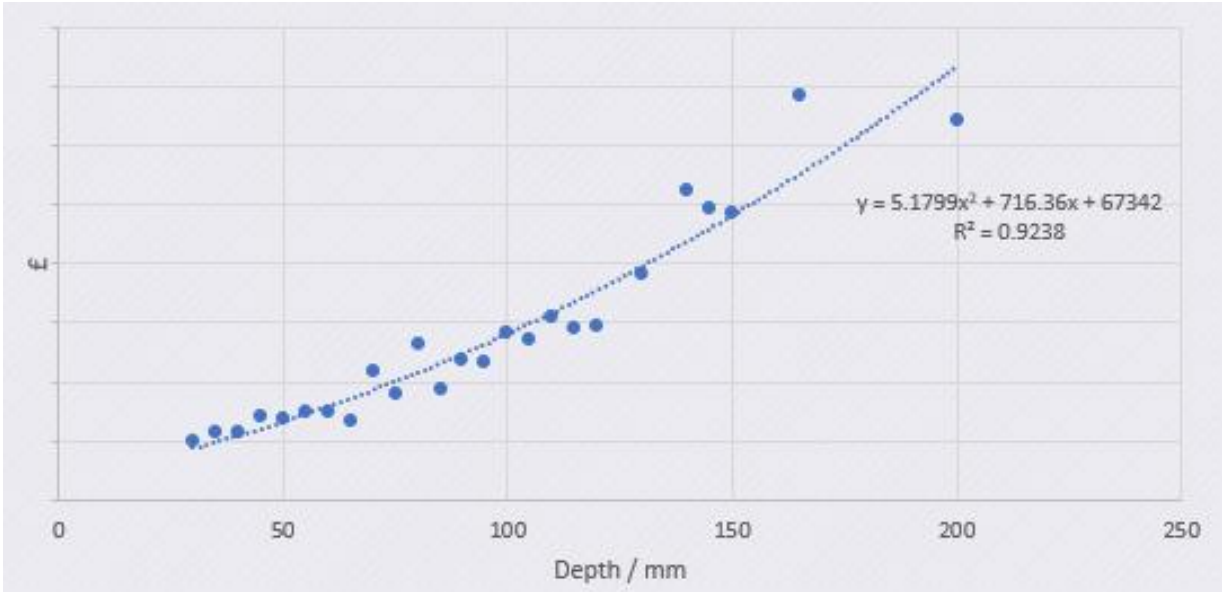
It is clearly not possible to go back in time and correct the original pavement depth numbers included in the RIS2 plan. The question is how to come up with an appropriate requirement for RP2 that is in line with the funding that National Highways has received, and that it can reasonably be held to account against.

QUESTION	Discussion & view
Is 71.8mm a reasonable assumption for RP1 baseline?	We think that looking at what was actually delivered in RP1 is the best available basis for recreating the RP1 baseline. It is of course possible that what was actually delivered is different to what was intended to be delivered, but on balance it is difficult to identify a better approach. We also consider that the database used by National Highways is appropriate, and that the calculation approach is sound – with outliers identified in a reasonable way.
Is it reasonable to add 7mm to the RP1 baseline in order to create the RP2 baseline?	There are two potential ways to create the RP2 baseline. Using an absolute uplift – the 7mm, or using a percentage uplift of 7/46 = 15.2%. Clearly the percentage uplift would give a higher RP2 baseline. We consider that the 7mm uplift is appropriate as the value of material is directly related to the volume. It is known that 46mm is not the correct assumption so it doesn't make sense to use it in the calculation. The separate question of course is the asset management argument about why a 7mm increase in depth was seen as the best WLC approach.

Given the significant increase in depth, National Highways has developed a robust methodology to quantify the value

Discussion

- National Highways has taken RP1 and RP2 project data, converted to a consistent price basis, and undertaken some data cleansing to get rid of outliers
- Plotting the data points National Highways has achieved a very strong relationship – see adjacent chart
- This allows a calculation of the value of the additional 6.4mm of depth between the updated post-efficient baseline and the out-turn depth to-date of **£10k per lane-km**
- This can then be extrapolated across the entire volumes to be delivered in RP2 to calculate the total additional value. Assuming the RP2 volume on slide 39 the value is: **7,500 x £10k = £75m**
- National Highway's main intent is to ensure that this value is recognised – otherwise it might be regarded as an overspend / inefficiency if only the lane-km was analysed
- **We consider the methodology to provide a fair and robust quantification of the value of the additional depth and should be used for end of Road Period calculations**



Source: National Highways analysis

National Highways now needs to gather pavement-depth data for its final proposal, and detail the asset management decisions

Discussion

- We understand that National Highways intends to update the calculations referenced here for end of RP2 data, and use this as the basis for its final submission. Consistent with the views set out here, we consider this to be a reasonable approach

- There are a small number of important additional matters that National Highways will need to address as part of its final submission:

    - **Efficiency impact** – the main aim for National Highways has been to make sure that it has a way of valuing the extra value created from extra depth – and to avoid being penalised for the additional spend. This needs to be converted into the impact on embedded efficiency / the efficiency KPI
    - **Asset management basis** – while it is clearly difficult to ensure delivery is always equal to planned volumes, there are some challenging questions for National Highways in terms of how it has come to deliver almost twice the intended additional depth. This explanation forms a key part of the final submission

- ORR will likely also want to undertake its own assurance of the calculations underpinning the charts presented here – as well as deciding whether it agrees with the logic of our views.

The final question is how to value any units of over- or under-delivery of the five key renewals

The challenge & approach

- National Highways track the volumes of renewals delivered, so the missing piece is what is the 'unit rate' to apply for each renewal type
- There are a number of ways of generating such a rate – one approach could simply be to use the 'average' implied by the original budget. That is, the total budget for each renewal type divided by the planned volume
- National Highways has chosen to calculate from the actual out-turn data, which makes sense as this should be closer to the 'true' value of the over- or under-delivery
- One challenge that National Highways has had to face is that the project data for renewals projects – stored in Oracle – does not easily provide a 1:1 mapping between project costs and volumes of a particular renewal. This is because each renewal 'intervention' combines a number of renewal types
- The other challenge is to what data are included within the calculation of the average unit rate. There can be significant variation in unit costs by project, for a variety of reasons. National Highways' approach has been to:
  - First, define a maximum allowable deviation from the mean to exclude true 'outliers'. National Highways has set this at 60%
  - Calculate a range of means based on the different quartiles, **after** excluding the outliers with >60%. This allows insight into the variability within the dataset. A final check is the mean without excluding any datapoints
  - Compare with other available information such as unit costs derived from pen portraits

Results

The outputs are shown in the table on the next slide. Key points to note:

- The data provides a reasonable coverage of the actual projects undertaken by value and volume
- There is the variation that you would expect between the different types of means
- National Highways is proposing to use the 'midpoint' average after excluding data points >60% deviation from the mean
- This mean is typically a bit higher but quite close to the pen portrait calculation
- Given the way volumes have been defined for significant structures – i.e. no standardised definition of the intervention type – a unit cost has not been derived for this renewal type

For the five key assets, National Highways has calculated a robust unit-rate to value the impact of over- or under-delivery

a. Asset type	b. Max. deviation from mean (+/- %)[1]	c. £/unit – lower quartile mean[2]	d. £/unit – upper quartile mean[2]	e. £/unit – P50 (weighted mean of unit cost within upper and lower range)[3]	f. £/unit – mean not adjusted for unit cost extremities[4]	g. £/unit – pen portraits[5]	h. Coverage (%) of dataset asset output (dataset coverage of total outputs)[6]
Asphalt pavement	60%	£106,475	£273,990	£170,911	£198,008	£167,333	82% (93%)
Concrete pavement	60%	£1,299,667	£1,529,885	£1,461,169[7]	£2,433,882	£2,064,000	84% (82%)
Steel VRS	60%	£114	£271	£166	£195	£169	32% (84%)
Concrete VRS	60%	£1,116	£2,752	£1,763	£1,763	£1,788	100% (82%)[8]
Sig. structures	n/a	n/a	n/a	n/a		£4,994,118	n/a

Source: National Highways analysis

We consider that National Highways has made reasonable choices in identifying the appropriate unit cost for each renewal type, taking into account the challenges with available data

We consider that National Highways has made good progress in addressing a difficult challenge and endorse the work to-date

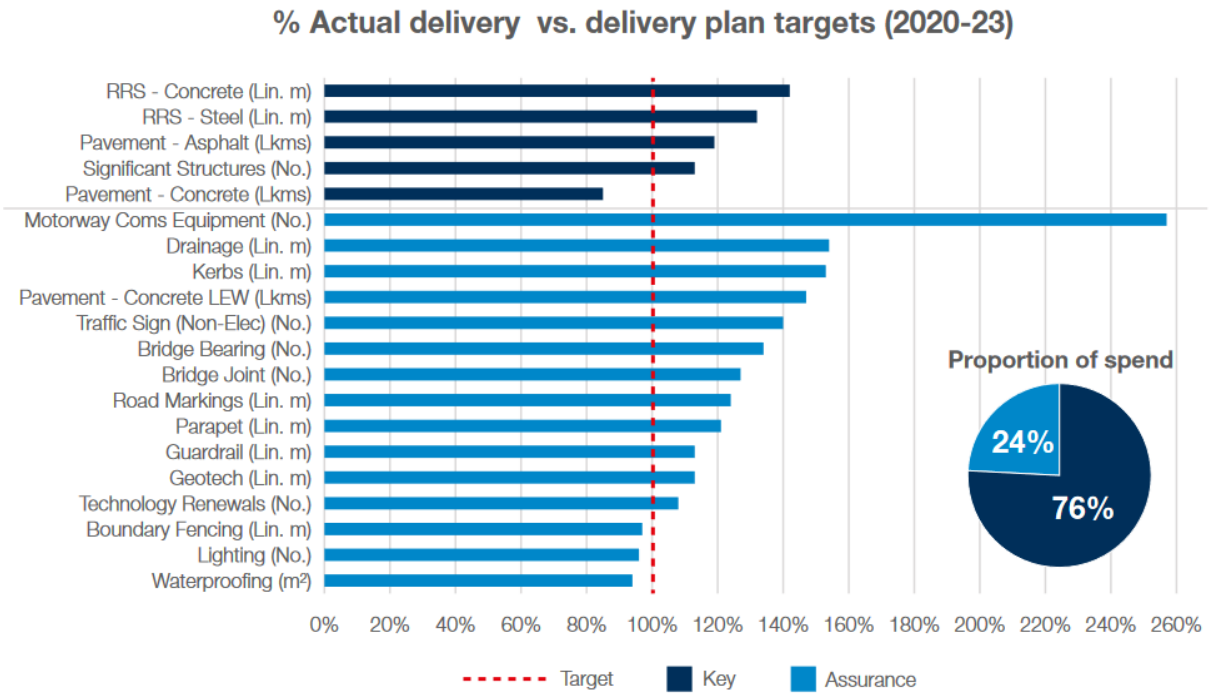
Discussion

- We consider that National Highways has undertaken a reasonable calculation in working out how to quantify the value of volume above and below the RP2 commitment
- We think that the checks undertaken using other available information is useful
- We have undertaken our own check – set out on the right of this page. We have taken the unit cost calculated from the National Highways methodology and multiplied it by the RP2 volumes to see if we can reconcile it to the overall renewals budget
- Recognising that the unit rate for significant structures is from case-study analysis and is subject to greater variation, the total budget is slightly under the 75% expected from these five categories. This confirms the use of the data

Category	Unit of measure	£m per unit	Volume	TOTAL (£m)
Asphalt pavement	Lane kilometres (ln.km)	0.17	7,500	£1,282.5
Concrete pavment	Lane kilometres (ln.km)	1.46	125	£182.6
Steel RRS	Linear metres (lin.m)	0.0002	1,540,000	£255.6
Concrete RRS	Linear metres (lin.m)	0.0018	80,000	£141.0
				£1,861.8
Significant structures	Number (no.)	4.994	170	£849.0
			TOTAL	**£2,710.8**
			% OF RENEWALS BUDGET (£4.1bn)	**66%**

Source: Rebel analysis

National Highways has developed a good basis for its final proposal, which should also address additional questions



Additional questions for National Highways…

i. Evidence that adjustments to the renewal volumes have been driven by good asset management and a commitment to WLC approach, rather than simply being the 'easiest' approach to delivery

ii. Related, demonstrating the connection between asset management planning and delivery in practice. For example, demonstrating that National Highways continues to move away from delivery of volume in winter months

iii. Confirmation of whether any other adjustments are required in assessing the overall efficiency position – for example is the overall renewal spend higher / lower than funded; and are outputs / KPIs in line with RIS2 proposals?

iv. Ideally, some further insights into the treatment of structures, and whether the unit rate arising from case-studies is applicable – as well as the volume out-turn with an explanation of why different to original plans

v. An understanding of why so many renewal volumes are significantly over the planned volumes after the first three years (see chart taken from efficiency submission 2023)

4.

Recommendations on how to update the EIMM

This section gives recommendations on how to improve the EIMM to better take account of head- and tailwinds and renewal measurement

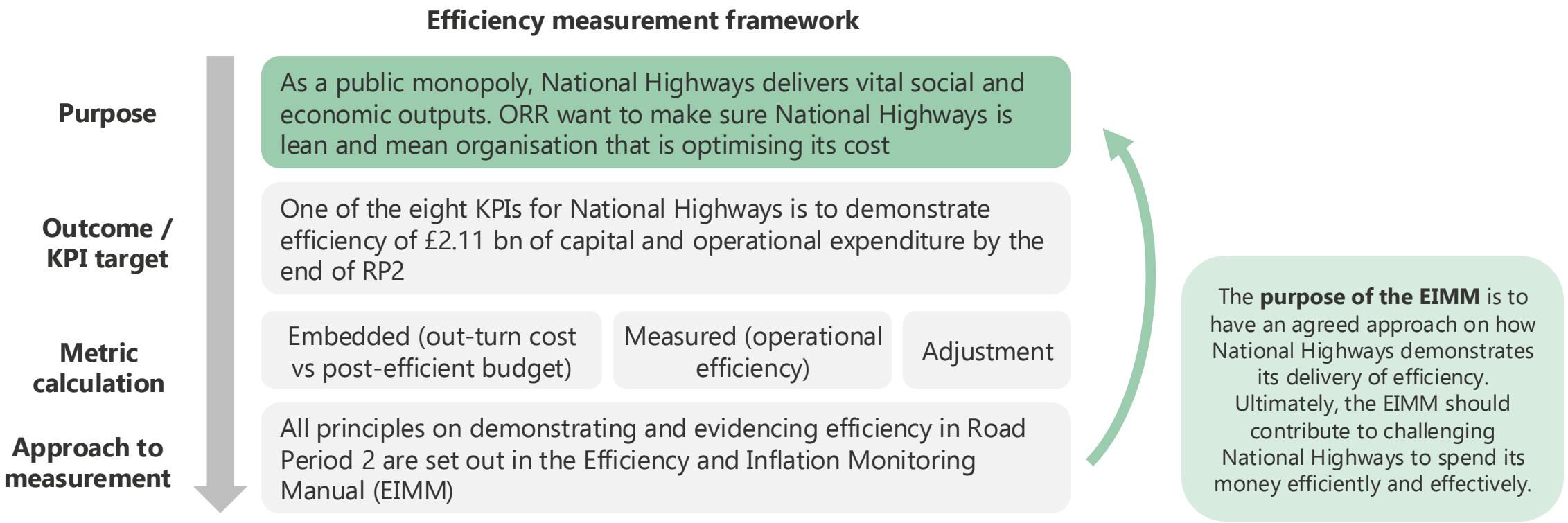
Discussion

- The Efficiency and Inflation Monitoring Manual (EIMM) outlines Highways England's approach to defining, demonstrating, and providing evidence of efficiency delivery in RP2.
- Questions to be answered in this section are:
  - *How could the headwinds/tailwinds adjustment process be improved for future RPs, including updates to the Efficiency and Inflation Monitoring Manual (EIMM) as appropriate.*
  - *How to achieve greater clarity around renewals efficiency measurement going forward. Including, but not limited to, the specific issue of dealing with over- / under-delivery*

Upcoming slides will cover:

- Purpose of efficiency measurement and the challenges of the current approach outlined in the EIMM
- Experience from other regulated sectors
- Options for adjustments of the EIMM
- Recommendations on how the headwinds / tailwinds adjustment process could be improved for future RPs
- Recommendations on how greater clarity can be achieved around renewals efficiency measurement in future RPs

Efficiency measurement should provide an accurate picture of what has been achieved – enabling continuous improvement



The **purpose of the EIMM** is to have an agreed approach on how National Highways demonstrates its delivery of efficiency. Ultimately, the EIMM should contribute to challenging National Highways to spend its money efficiently and effectively.

Other sectors have detailed arrangements covering the treatment of headwinds & tailwinds as part of the approach to managing change

ORR Rail[1,2,3]

- Process for managing change: The ORR allows for changes to be made to the regulatory settlements during the control period. The changes are categorised into four types: consulted, notified, exceptional and risk funding. Our understanding is that a change in the efficiency target falls under a risk funding change.
- External factors: Head- and tailwinds are acknowledged by the ORR Rail as events largely beyond Network Rail's control. Network Rail utilizes the fishbone framework to identify potential headwinds in advance for CP6. ORR Rail assesses any adjustments or headwinds not reflected in the pre-control period plans to ensure they are broadly tracked and appropriate; however, details on their assessment methods remain unclear. For CP6, the efficiency target has been revised due to cost pressure from COVID-19. We understand that the fishbone framework is also used for CP7.

Used documentation:
1. Annual efficiency and finance assessment of Network Rail 2023
2. PR23 final determination: Supporting document - Policy position - Managing Change
3. Delivering an Efficient Railway

Ofwat[4,5]

- Process for managing change: Ofwat allows for changes and has a reconciliation mechanism in place setting out the process for companies during and at the end of the control period.
- External factors: Ofwat acknowledges unique circumstances beyond management control for which companies can make an adjustment.
- Cost claim adjustments: Ofwat utilises models to assess companies' efficient expenditure requirements. It has a structured process for companies to submit Cost Adjustment Claims (CAC) for these models, with clear guidance emphasising necessity, outside management control and cost-efficiency. Although the CAC are part of the Periodic Review process, it illustrates a clear process for handling adjustments.

Used documentation:
4. PR19 Reconciliation Rulebook Consultation – proposed approach and policy
5. Technical appendix 2 Securing cost efficiency

We have set out four different options for adjustment of the EIMM; from keeping the EIMM as it is to implementing a detailed approach

Increased detail of option

1 No changes to the EIMM

The EIMM is recognises external changes / factors but no details on what it entails or how to adjust are given.

2 Include principle of head- and tailwinds

Principles on what is defined as a head- or tailwind can be added to explicitly acknowledge external factors and enhance clarity.

3 Include principles and guidance on reporting change

Besides, adding the principles of a head- and tailwind, the EIMM should set out the process that must be followed for relevant changes, such as target adjustments or additional funding.

4 Include approach on change, evidence and timeline

Setting out criteria and evidence requirements, including a timeline of the process. This approach ensures clarity and accountability in demonstrating the need and impact of an adjustment.

Increased resources / effort needed to monitor

Discussion

- We have developed four options on how the EIMM could be further developed, drawing from examples set by other regulators
- The options vary in the level of detail to be added to the EIMM, as illustrated in the graphic to the left. However, adopting a more detailed approach may also increase the regulatory burden.

We have analysed the pros and cons of the different options aimed at enhancing the process of head- and tailwinds

1. No changes to the EIMM	The EIMM is already well-developed, and the aim is not to increase the regulatory burden on the monitoring team. Therefore, adjustments would not be necessary, particularly considering that RP2 was an exceptional road period, characterised by unexpected headwinds. However, it does not use the opportunity to improve the approach for RP3 and beyond.
2. Include principle of head- and tailwinds	Although the EIMM is well-developed, enhancing clarity by defining the principles of head- and tailwinds could prevent disputes and ensure agreement between National Highways and ORR in future road periods. This option would necessitate updating the EIMM but would have a limited effect on the regulatory burden.
3. Include principles and guidance on reporting change	This option goes beyond implementing principles of head- or tailwinds, also proposing an approach for reporting any relevant changes from previous agreements and agreeing on a timeline beforehand to assess the case, as seen with ORR Rail's process around managing change. It minimises regulatory effort as cases require review regardless.
4. Include approach on change, evidence and timeline	This option outlines a detailed approach to establish clear expectations from National Highways regarding the evidence required, timeframes for submission of each change, and the assessment process. Such clarity could potentially save time by reducing ongoing discussions between National Highways and ORR. However, it entails increased monitoring involvement.

Discussion

- While clarity is desirable, it's important to balance this with avoiding excessive workload. Both factors should be considered when updating the EIMM.
- The current approach has no clear guidance on how to deal with head- and tailwinds. When updating the EIMM, alignment with its purpose and the efficiency measurement framework is crucial. Additionally, the unique circumstances of Road Period 2 should be considered in the decision-making process.

We suggest incorporating the principles of head- and tail-winds as set out in option 3

Discussion

- Each option's advantages and disadvantages are outlined on the previous slide. While the EIMM is already well-developed, opting for Option 1 (no changes) wouldn't enhance clarity or facilitate learning from this road period. Options 2, 3, and 4 offer improved clarity through a more detailed approach, progressively per option, to adjustments and change management. However, Option 4 entails increased regulatory effort, which is less desirable due to the reluctance to increase monitoring involvement.
- **We recommend integrating option 3 and including head- and tailwind principles into the EIMM, including guidance on the timeline and process. This option provides greater clarity on what constitutes a head- or tailwind but won't require more resources from the monitoring team as the case requires review regardless.**
- National Highways established overarching principles, developed for the cases as discussed in this report, these principles seem reasonable and are used as a starting point.

Recommended principles for head- and tailwinds

i.	Timing – is post settlement of the RIS
ii.	Efficiency impact is material, total value must be more than £20m (~1% of efficiency target)
iii.	Is beyond National Highways reasonable control or expectation
iv.	The driver does not fall within the scope of the Central Risk Reserve (CRR)

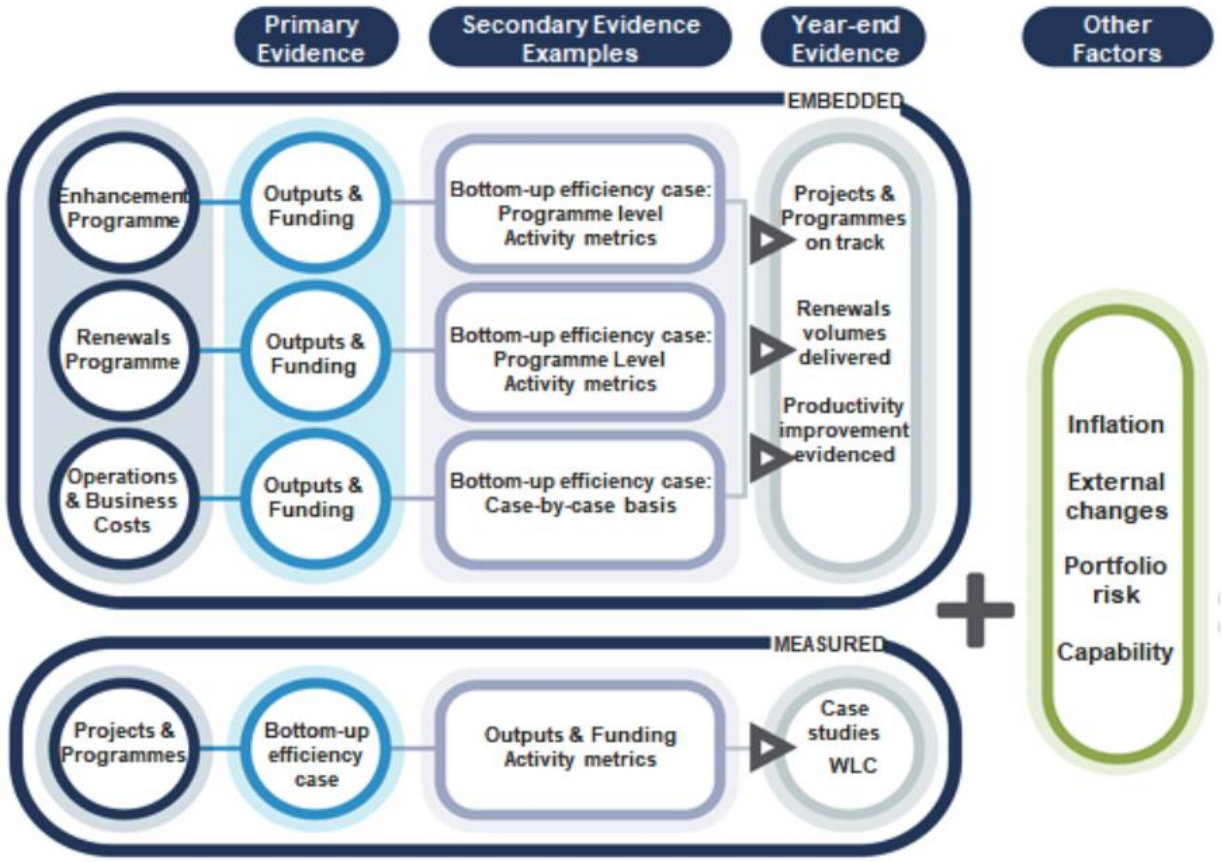
Proposed process to adopt in the EIMM

National Highways should engage with ORR as soon as possible when considering a head- or tailwind and adjustment of the efficiency target

National Highways should agree on a timeline with ORR on the decision-making process as well as the time required for ORR to issue its opinion

Based on this early engagement, National Highways must submit a final proposal to ORR, outlining the principles and methodology, which will be assessed by ORR

As well as five key asset lines, the EIMM sets out a commitment to secondary evidence, tracking outputs, and WLC impacts



Discussion

- Capital renewals are within the embedded efficiency approach within the EIMM. This entails tracking five key asset categories that represent around ¾ of the spend
- Some secondary evidence from case studies and unit cost analysis is also provided. And there is an overall check of the performance via KPIs and PIs. This check is more of an overarching validation as there is not often a direct relationship between renewal and KPI / PI, and the metrics are unlikely to pick up the impact of reducing renewals in the short-term – this will be evident in the future periods.
- The EIMM makes a number of important commitments around the change-control for renewals including the link to asset management: *"A narrative will also be included in the annual efficiency report to explain the activities and processes we have put in place to demonstrate asset stewardship"*

The EIMM appears to capture the right commitments, but some of them could be better implemented

We suggest the following changes:

(i) Continue to work to improve the clarity around the volumes to be delivered, particularly for structures. Clarity around volumes and the ultimate outputs / KPIs are the key factors underpinning success of embedded efficiency.

(ii) If it is not possible to be clear about the volumes – for example because initial investigative work is required to determine the intervention – then there should be a different approach to setting the RIS budget and/or the associated embedded efficiency target. For example, the fixed element of funding for known investigative work, and a variable element (to a cap) for other works dependent on initial findings. There would need to be appropriate governance around the release of funds

(iii) Consideration should be given to expanding the number of categories included within the EIMM key evidence. There is considerable value of renewals not being tracked, particularly given there appears to be significant underlying variability vs plan

(iv) There should be improved processes around renewal change-control so that there is a robust asset management basis for changes to plan. This should be set out as a requirement in the EIMM and clearly articulated in National Highways annual reporting

(v) The basis of embedded efficiency is to allow National Highways the flexibility to manage risks and uncertainty. On that basis we do not suggest separating out the individual budgets. But it would be helpful to provide greater visibility in reporting against each asset.

(vi) ORR should seek a proposal from National Highways about how it intends to improve the Oracle data that allows for better linking of actual renewal cost within projects. This is important to understand delivery and measurement of out-turn efficiency, as well as quantifying any over- and under-delivery. Clearly this is not a simple fix but has the potential to deliver long-term value

(vii) We consider that the KPIs and PIs provide an important part of the check around the embedded efficiency test of whether 'all outputs have been met'. This provides an important additional test to whether the proposed investments have been delivered as ultimately the interest is in the outcomes from such investment. It is hard for a KPI to meet all intended purposes so there is no easy answer. There are other programmes of work reviewing the KPIs and it is helpful if that work can consider any opportunities to better directly measure the impact of renewals spend.

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