

Efficiency Report Year 3 2022-23



“

National Highways continues to be committed to connecting the country and driving social value through our focus on safety, customer and delivery.

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A photograph of a highway interchange at sunset. A large overhead sign on a metal structure reads "DIVERTED TRAFFIC FOR AIRPORT USE M62 M60" in orange LED lights. A white truck is driving away on the highway below. The sky is a mix of orange and blue, and there are multiple overpasses visible in the distance.

DIVERTED
TRAFFIC
FOR AIRPORT
USE M62 M60

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Foreword

National Highways continues to be committed to connecting the country and driving social value through our focus on safety, customer and delivery. This includes owning the benefits, outputs and outcomes enshrined within our key performance indicator (KPI) targets for the second road period (RP2).

I am the Executive lead on delivering the RP2 efficiency, set initially at £2.23 billion over the second five-year road period but adjusted to £2.11 billion following the Transport Select Committee's recommendation to pause the Smart Motorway Programme. The five-year funding has been adjusted further following the Chancellor's Spring Budget 2023 and this will have an impact on the efficiency target, which has yet to be determined.

We are working to deliver the target efficiency by 2025, and at this stage we have met our cumulative year three efficiency milestone of £776 million. We have done this by working collaboratively with our supply chain to identify and implement innovation in every aspect of what we do and deliver, and this will continue throughout and beyond RP2.

We are already working on the plan for the third road period starting in April 2025. This will recognise increasing environmental and stakeholder expectations, including aspirations on safety, reducing our environmental impact, improving customer experience and increasing taxpayer value. Working closely with our Monitor, the Office of Rail and Road (ORR), this report summarises the primary and secondary evidence which ORR has used to assure and validate the value of our achievement to date.

We are proud of what we have delivered to date but recognise that there is still a long way to go, and there are substantial hurdles that we must overcome in continuing our trajectory toward the five-year efficiency target. Our performance to date, trajectory and summary of macro-economic headwinds, such as inflation, is set out in this report



Malcolm Dare

Executive Director, Commercial and Procurement

Executive summary

The government's Road Investment Strategy (RIS) enables us to operate, maintain and improve England's strategic road network (SRN) to support the millions of people using the SRN and provide economic benefits to the communities and businesses who live and work alongside it. The RIS sets out the delivery, performance expectations and funding for the second road period (RP2) which runs from 2020 to 2025. This forms the basis of our Delivery Plan which is updated annually to reflect agreed changes to deliverables and consequent funding.

Following the Transport Select Committee's recommendation to pause the roll out of the Smart Motorway Programme (SMP), the Spending Review in 2021 (SR21) reduced our five-year funding from £27.4 billion to £24 billion with a consequent efficiency target reduction from £2.23 billion to £2.11 billion. Both funding and the efficiency target will be adjusted further following the rescheduling announced prior to the Chancellor's Spring Budget 2023 but the detail has not yet been determined. Until these changes have been agreed we will continue to report performance against a £2.11 billion efficiency target.

The efficiency target is set and revised following detailed independent scrutiny by our Monitor, the Office of Rail and Road (ORR). It is intended to be stretching but achievable, without compromising either the safety and welfare of people working or travelling on the network, or the long-term sustainability of our supply chain. Delivery requires working closely with our extended supply chain and maintaining a high level of innovation in everything we do. The RIS requirement is to achieve the KPI target by the end of RP2 in March 2025.

In the first three years of RP2 we have kept our spend within the available funding for both capital expenditure (capex) and operational expenditure (opex). By delivering our agreed outputs, we have successfully achieved our third-year efficiency milestone (actual £848 million, milestone £776 million), covering the period 2020-23.

Whilst milestone achievement indicates a positive trajectory, we recognise that there is still more to do. Unfunded headwinds have materialised, as recognised by government, including inflation which has been far higher than anticipated when post-efficient funding was agreed in 2020, alongside others such as Covid-19. These are covered in the main body of the report. We have agreed with ORR how to address inflation and are engaging further to evaluate the other unfunded headwinds, and to agree how they will be reflected in efficiency reporting.

Efficiency delivery requires a comprehensive forecast of costs and outputs through to 2025. This forecast inevitably carries a degree of uncertainty, such as the potential impact of Spring Budget 2023, with this uncertainty reducing as we approach the end of RP2. Our 2020-23 milestone performance and five-year forecast is summarised in Fig.1 below. For RP2 we are forecasting to exceed the £2.11 billion target, though we highlight that this is subject to the uncertainty described.

Efficiency category	RP2 post-efficient baseline	2020/23		RP2
		Milestone	Actual	Efficiency forecast
Embedded	£20,044m		£496m	£1,599m
Measured – RP2 Generated	£4,592m		£91m	£218m
Measured – Carryover	£0		£262m	£399m
Total	£24,637m	£776m	£848m	£2,216m

Figure 1: Overall milestone performance and five-year forecast

The body of the report will summarise the primary evidence that demonstrates the successful delivery of our 2020-23 efficiency milestone and the trajectory towards the five-year target.

Summary performance for 2020-23 secondary evidence is covered in appendices, alongside other supplementary information relevant to support the primary evidence. Secondary evidence includes case studies which explain how we are delivering innovation and improvements, showing a cumulative assured value meeting the primary efficiency value. It also includes activity metric analysis, which provide an insight into key unit cost movements.





1. Introduction

1.1. The challenge

Since our formation as a government-owned company in 2015, we have striven to become a world-leading service provider in managing, operating and maintaining the 4,300 miles of England's SRN that connects the country and carries 34% of all road journeys and 68% of freight journeys in England.

Our objective is to ensure that these journeys provide a positive experience in safety, reliability and predictability. We play a critical role in supporting the economy through national productivity, value for money and sustaining reliable connections between businesses, labour markets and international gateways.

As a publicly owned company we have a responsibility to provide a balanced performance across our core drivers of safety, customer service, and delivery. This includes meeting stretching but deliverable efficiency targets which drive continuous innovation but do not put at risk our safety objectives or the long-term commercial sustainability of our extended supply chain. Our five-year funding is predominantly post-efficient meaning that it has already been reduced by the value of the efficiency target.

The coming years will see increased expectation and changes in transportation, road travel and personal and commercial mobility. We are already planning for future road periods where technology, whole life cost (WLC) investment, carbon footprint reduction and a long-term view of efficiency will be more important than ever.

Following the success in RP1 where we delivered efficiency in excess of the £1.2 billion target, the government set our efficiency target for RP2 at £2.23 billion. In 2021 we had a £3.5 billion funding reduction which led to a revised efficiency target of £2.11 billion. Further government announcements including the impacts of Spring Budget 2023 have yet to be reflected in our efficiency target to the end of this RP. These changes will be assessed and scrutinised with ORR and formally change controlled once they are ready.

1.2. RP2 efficiency categories

In RP1 we measured efficiency against capital enhancements, covering large individual schemes which upgrade the SRN. This included schemes such as network widening, bypass and junction improvements, and SMP schemes. Alongside this, we measured efficiency against capital renewals which are the smaller schemes needed to keep our roads and infrastructure in good condition.

In RP2 we continue to deliver efficiency against these categories, but also against an extended scope including;

- Opex, which covers our operations, maintenance and business costs, such as our control centres and provision of traffic officers.
- Non-roads capex which includes investment in new vehicles, IT projects and buildings.

The principles of how efficiency is defined and evidenced was published in the Efficiency and Inflation Monitoring Manual (EIMM). These principles were agreed with the Department for Transport (DfT) and ORR, which acts as the independent monitor and undertakes assurance of our performance.

In the EIMM we committed to publish an annual report which sets out progress and evidence in meeting our annual milestones and the trajectory towards achieving the five-year KPI target. This is the third such report for RP2 and covers performance for 2020-23.

The RP2 target is broken down into two main categories:

Embedded efficiency – activities with a defined scope or output, which are funded with post-efficient costs. To agree post-efficient costs, we challenged historic costs and delivery approaches and then built efficiency expectations into our *Strategic business plan (SBP)*. Further detail on this can be found in the EIMM.

Measured efficiency – initiatives that benefit later road periods or reduce risk within RP2 but do not reduce funding for RP2. This includes WLC efficiency and carryover from RP1. It also ensures that efficiencies generated at the design stage for early stage schemes are identified and recorded.

The RP2 target breakdown is also shown in Fig.2;

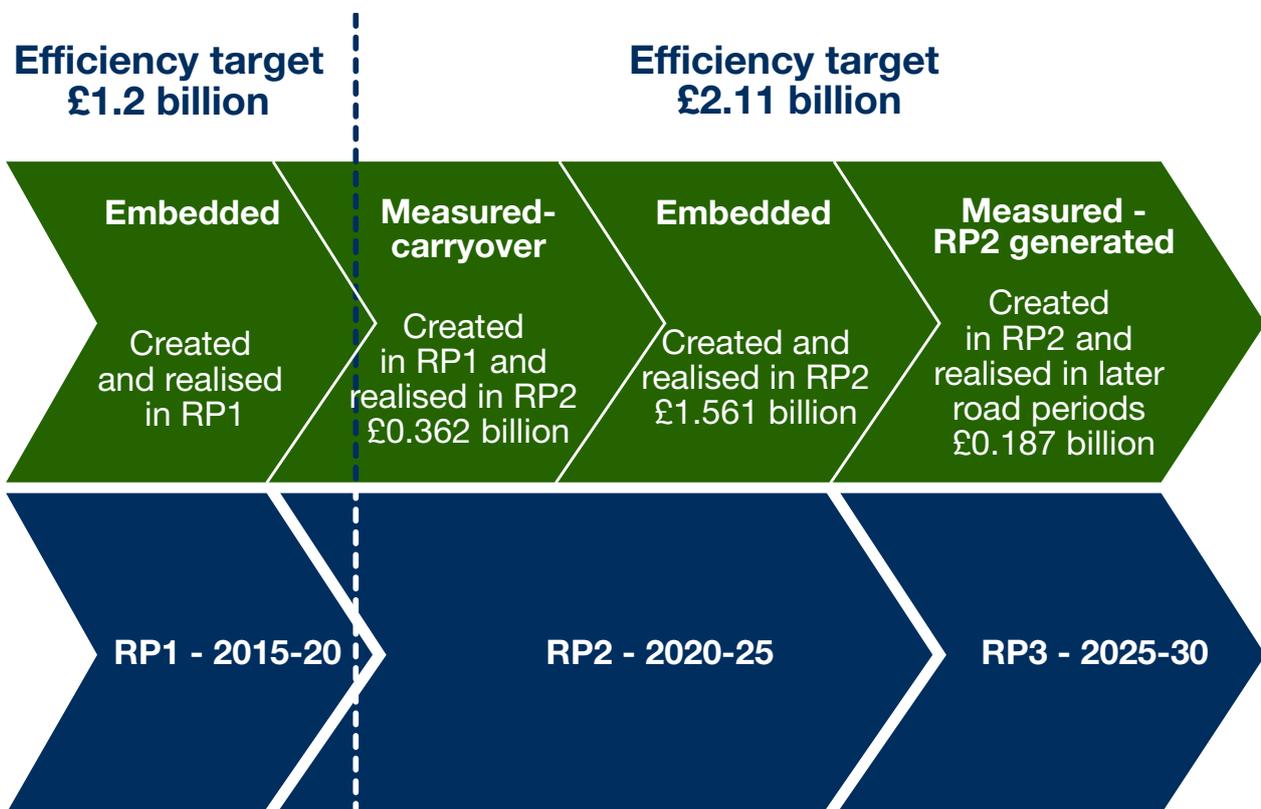


Figure 2: RP1 and RP2 Efficiency target breakdown

1.3. Efficiency evidence

For embedded efficiency we provide evidence with a combination of;

Primary evidence – delivery of agreed outputs and outcomes within the post-efficient funding envelope (moderated by the impact of agreed changes) and;

Secondary evidence – a combination of case studies, explaining the approach to delivering efficiency, and quantitative evidence using unit costs, known as activity metrics. Secondary evidence will cover the key elements but not the total value of efficiency.

For measured efficiency the primary evidence is achieved through the production of assured case studies. Where needed, secondary evidence may be provided through measures such as activity metrics. As the majority of measured efficiency schemes are delivered post-RP2 and are unique in their size and scope, the opportunity to provide secondary evidence is limited. We are in discussion with ORR as to how we may be able to provide this.

The breakdown of efficiency over time is presented in Fig.3:

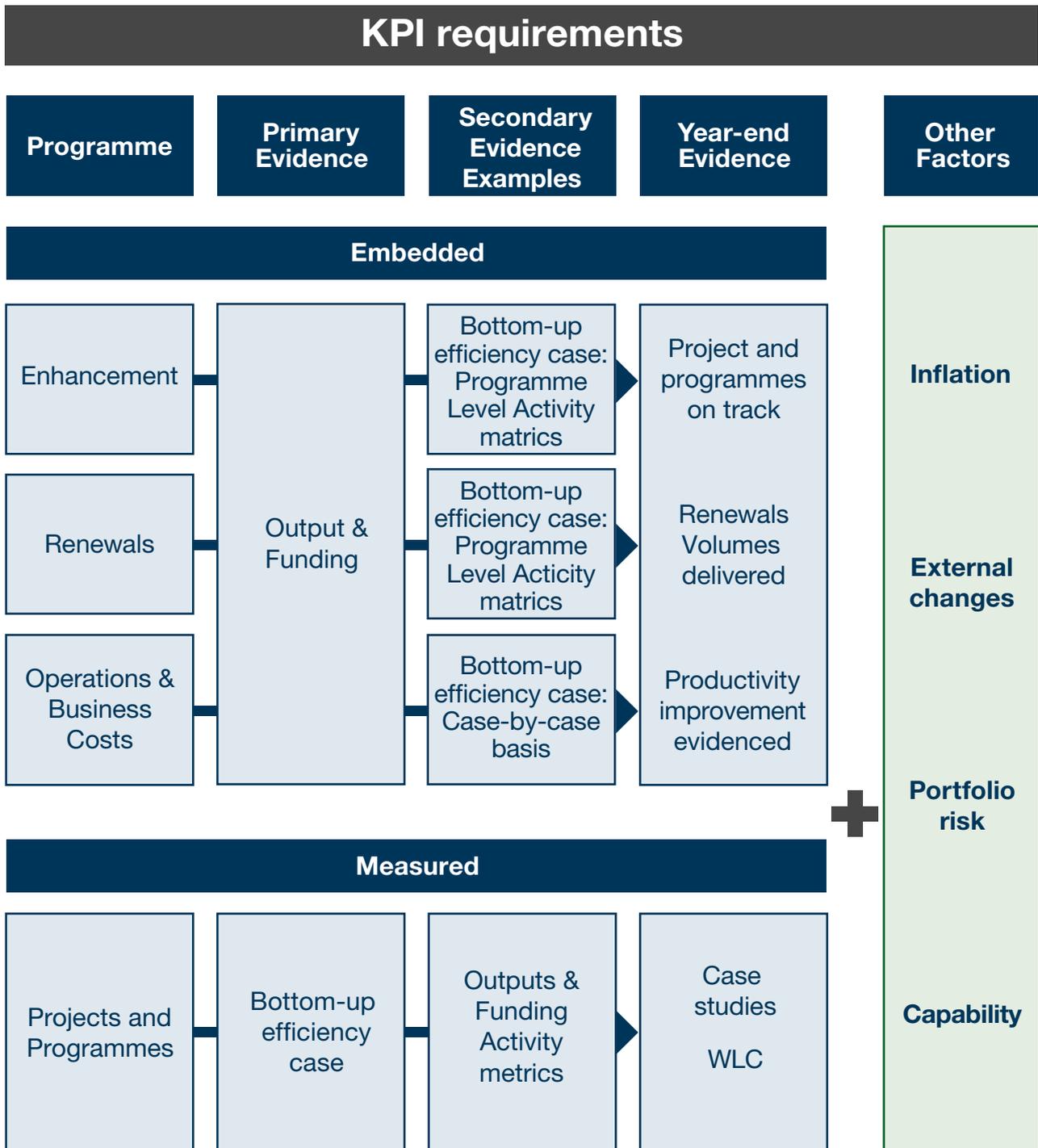


Figure 3: Efficiency KPI requirements

2. How we will deliver the KPI

We are three years into delivering our plan which sets out the end-to-end approach for efficiency creation, governance, assurance and controls. It is based on the creation of an integrated suite of change programmes. These have been designed to generate a pipeline of efficiency ideas that collectively exceed the KPI target. Having a pipeline that exceeds the target increases confidence in achieving it. The pipeline has four enabling themes:

- Procurement – improvements developed through the Routes to Market programme. This includes the use of Regional Delivery Partnerships (RDP) (six-year design and build contracts aligning all parties' interests).
- Effective operations – improving our operational performance, including the use of renewals efficiency levers which are initiatives that are repeatable across schemes, and the Operational Excellence (OE) programme.
- Improved capability – including our people, senior leadership team, supply chain and our internal plan for RP2, *Highways England 2025* (HE2025).
- Effective processes – improving the processes we use, including the use of Lean techniques, and the Major Projects transformation programme.

The cross-company improvements under each of the enabling themes are summarised in Fig.4. We regularly review the value of these by working collaboratively across the business. The governance for this programme is controlled through our Transformation Programme.

We operate in a dynamic environment which must reflect changes in stakeholder expectations. This means that the above core levers will increasingly be supplemented by other strategies and changes which are being developed in RP2 and will inform RP3 planning, which has already started.

	Major Projects	Commercial & Procurement	Operations	Safety, Engineering & Standards	Corporate
Procurement		<div style="border: 1px solid black; padding: 2px; display: inline-block; margin-bottom: 5px;">AD contract model roll-out</div> Category management Strategic procurement		M.C.H.W. review	
	<div style="border: 1px solid black; padding: 2px; display: inline-block;">Alliance and RDP models</div>				
Effective Operations	Transformation programme	3yr rolling improvement programme Integrated estimating system procurement	Operations Excellence programme	Standards review Lean programme	Commercialising the business Data management strategy Benchmarking programme Make not buy policy
Effective Processes	Capital programme management development PPM upskilling System changes to cost, risk & schedule management	Specialist skill development IT, commercial modelling, utility engagement, improvement mgmt., dispute resolution	Asset management strategy	Innovation and modernisation research programme Concrete barrier cost reduction programme	People engagement Specialist skills development People upskilling programme HE 2025/2050 programmes
Improved Capability	Transformation programme	Contract control framework CIPS Advanced Award	Delivering excellence programme	Departures review Fit for the future programme	Quality management system development (Way we work)

Figure 4: Cross-company improvements under each enabling theme

3. Change control

In preparing a five-year delivery programme it is normal for there to be some portfolio re-balancing. This is governed by a formal process of change control where significant funding impacts, and any resulting change to the efficiency target, are agreed with DfT, alongside any changes needed to open for traffic (OfT) and start of work (SoW) dates.

During 2022-23, delays resulting from the timing of Secretary of State Development Consent Order (DCO) approvals or subsequent challenges to the DCO decisions have meant some schemes have not received their planning consent as quickly as we and DfT expected. For these schemes, revised SoW and OfT commitment dates have yet to be determined. Once the outcomes are known new dates will be agreed through change control with DfT and published.

In addition, we are working with ORR, DfT and Treasury to agree the impact of Autumn Statement 2022 (AS22) across all performance metrics, including efficiency. At the time of publication this impact is unclear.

As part of AS22 we provided options to DfT for addressing inflation based RP2 funding scenarios. These options have been updated to include schemes impacted by the Written Ministerial Statement, including deferrals of A27 Arundel Bypass, A5036 Princess Way, RIS3 pipeline schemes, and Lower Thames Crossing (where construction is being re-phased by two years). These are being assessed against potential longer term RP3 funding. The outcome of the AS22 funding revisions along with the recent government announcement to cancel new construction of Smart Motorways will also progress through change control.

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We are three years into delivering our plan which sets out the end-to-end approach for efficiency creation, governance, assurance and controls

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4. Central risk reserve

4.1. Overview

The cost of delivering the portfolio was based on scheme estimates produced in 2018 when the scope had not reached maturity. RP2 post-efficient funding agreed in 2020 included a central risk reserve (CRR) of £1.716 billion to cover:

- The potential cost associated with greater clarity of the required scope.
- Risk within our control which was not included in scheme baseline funding.

In line with the EIMM, unused CRR at the end of the RP is an efficiency. This is designed to incentivise effective risk mitigation. There is a formal CRR governance and control process in place based on three stages:

- Project managers identify and evaluate issues that lead to being unable to deliver within post-efficient budget, alongside the reasons why the risk cannot be effectively mitigated. This is to recognise scope which was not mature when the post-efficient funding baseline was set.
- There is an internal review of the scheme case, provision made for CRR draw down where appropriate, and an assessment of the potential future portfolio requirement for drawdown.
- Executive Directors review the case and decide whether to approve CRR drawdown.

The balance of CRR available may increase or decrease depending on approved changes to projects' RP2 cost forecasts. Drawdown approval increases both the pre- and post-efficient baseline of relevant schemes and reduces the CRR balance available to manage future portfolio risk. Conversely, funding of individual schemes that are forecasting an underspend may be reduced in order to top up CRR and increase the balance available for the remainder of RP2.

4.2. Current position

As described in the 2021-22 efficiency report, the value of our CRR was reduced from £1,716 million to £1,357 million as part of the SR21 funding settlement.

As of March 2023, the CRR funding of £1,357 million has been allocated as follows:

- Approved and drawn down (post-formal governance) £1,061 million
- Provisioned but draw down not yet reviewed and approved (pre-formal governance) £210 million
- Available for potential future draw down £86 million

This position is consistent with the drawdown planning assumptions set at the beginning of the RP, taking change control into account. We anticipated that there would be a significant draw-down before efficiency generating changes were introduced, enabling CRR to be topped up. The impact of CRR continues to be assessed as RP2 progresses.

5. Inflation

Inflation is part of the overall funding risk that we carry. This means that there is an absorbed upward cost pressure where actuals are greater than funded, and a downward pressure where actuals are less than funded. It is appropriate for us to evaluate the impact of inflation, both annually and cumulatively, and demonstrate that we are taking reasonable steps within our control to minimise the impact. We discuss with ORR the level of impact that this has on our reported efficiency performance.

There is no single publicly available model that enables inflation to be forecast and evaluated for the type of infrastructure work that we undertake. We have therefore developed and agreed with ORR a method of calculation that uses a bespoke model, sourced by the Building Cost Information Service (BCIS). This draws upon several data and information sources.

We agreed with DfT, ORR and Treasury a funded rate of inflation for RP2 based on the figures shown in Fig.5:

	2020-21	2021-22	2022-23	2023-24	2024-25
Capital works	3.41%	3.75%	4.57%	4.25%	3.53%
Operating costs inc. electricity	2.00%	2.00%	2.00%	2.00%	2.00%
Maintenance contracts	2.76%	2.76%	2.76%	2.76%	2.76%

Figure 5: Agreed funded value of inflation

In the current economic climate, the difficulty of forecasting future inflation has been exacerbated by uncertainty created by world events such as the ongoing Ukraine conflict. The latest data available indicates that actual inflation for 2020-21 was slightly below the value funded, but this has reversed in 2021-22 and 2022-23 leading to a position where there are unfunded cost pressures of £267 million to March 2023.

Figure 6 shows the size of the inflation pressure by efficiency type.

Efficiency Type	Inflation Pressure (2020-23)
Embedded – Enhancements	£61.5m
Embedded – Non-Roads Capex	£23.5m
Embedded - Renewals	£102.8m
Embedded – Opex	£79.3m
Total	£267.1m

Figure 6: Inflation pressure by efficiency category (2020-23)

ORR has accepted the negative impact that high levels of unfunded inflation has had on efficiency delivery and supports the need for an adjustment to the reported efficiency value to reflect realistic performance. Whilst the agreement with ORR would allow the full inflation pressure adjustment to be included in the reported figure, the adjustment included in the 2020-23 reported value currently only includes £85 million relating to Enhancement projects and Non-Roads Capex.

These areas of our business have defined outputs by which performance can be measured, giving us certainty that the inflation impact has not been simply absorbed. Of the two remaining efficiency types Renewals activity also has defined outputs. However, the complexity of different Renewals output types means that further work is required in 2023-24 to allow us to include the adjustment in the reported position. And for Opex, the outputs are more generic making them difficult to quantify and so an adjustment has yet to be made in this area. We will work with ORR to develop a strategy allowing recognition for the unreported pressure to be made in future years.



6. Managing risk and opportunity

A key aspect of efficiency delivery is risk and opportunity management. We closely monitor potential and realised risks to ensure that effective plans are in place to minimise negative impacts on performance. There is an equivalent process to ensure that we maximise the positive impact of identified opportunities on our performance.

The following four risks have the greatest governance scrutiny, identified through this process:

- Further schedule movement for the capital enhancement portfolio – recognising the number of schemes requiring future external Development Consent Order (DCO) approval to proceed.
- Delivering capital enhancement outputs within post-efficient funding – including the future potential draw down on the CRR.
- Unfunded additional costs outside of our control and not within the scope of CRR. These include non-recoverable VAT and Covid-19. The impact of such unfunded costs is currently being assessed but they are not included in our 2020-23 efficiency value.
- Actual inflation exceeding the value included in post-efficient funding and the resultant impact on cost increases, in *Section 5*.

The greatest opportunity is our structured transformation programme, mainly within the Major Projects and Operations Directorates. This is designed to support efficiency delivery by creating process and operational change which reduces the cost of programme delivery and enables the CRR value to be topped up.

Our Major Projects Delivery Transformation (MPDT) programme has been introduced to develop solutions to help projects successfully deliver in RP2 and beyond. These solutions have supported us in mitigating risks and reducing costs. Technology and process improvements coupled with effective change management has resulted in performance gains. Examples include using innovative costing tools to more efficiently cost options for appraisal, saving time and resource enabling a greater number of options to be appraised and therefore increasing the potential benefit-cost ratio of our options.

MPDT has contended with implementing solutions in a regularly changing environment, for example changes in the SMP and high inflation distorting the split between cost increases and efficiency gains made by projects. The programme now has a continuous pipeline of efficiency solutions that are being developed and embedded into projects and this will continue from RP2 into RP3.

7. Efficiency performance overview: 2020-2023

As discussed in the *Executive Summary*, we have successfully achieved our three-year milestone of £776 million, having delivered £848 million of efficiency.

An overview of this is shown in Fig.7 below with the subsequent sections of this report providing the detail, by efficiency category, as to how we have achieved this. Alongside financial performance, we have also worked to ensure that we have delivered the outcomes and outputs required to operate, maintain and improve the SRN, which is also outlined in the subsequent sections of this report.

The figure below shows that we exceeded our milestone by 9.3% (£72 million), putting us in a strong position as we enter year four of RP2

	Efficiency	Inflation adjustment	Total efficiency	Milestone	
Embedded	Capital enhancements	-£9m	£61m	£52m	
	Capital renewals	£182m	£0m	£182m	
	Opex	£186m	£0m	£186m	
	Non-roads capex	£53m	£24m	£76m	
	TOTAL embedded	£411m	£85m	£496m	
Measured	RP2 generated	£91m	£0m	£91m	
	Carryover	£262m	£0m	£262m	
	TOTAL measured	£352m	£0m	£352m	
TOTAL	£763m	£85m	£848m	£776m	9.3%

Figure 7: Overview of 2020-2023 cumulative efficiency performance

8. Embedded efficiency

When the budget of a project, programme or activity has already been reduced to account for an efficiency saving, we refer to this budget as post-efficient funding with an inbuilt ‘embedded’ efficiency. The programmes of work detailed within this section have post-efficient funding which is included in the efficiency target, and they have pre- and post-efficient baselines that we use to assess efficiency performance.

We achieved £495.7 million of embedded efficiency value for the period 2020-23 by delivering our agreed outputs within budget. The split between the various embedded efficiency categories is contained in the following sections. In line with the EIMM, capital enhancement efficiency is reported when relevant schemes achieve OfT status. There were nine capital enhancement schemes OfT in 2022-23, resulting in a cumulative nineteen schemes OfT to date.

The primary evidence for demonstrating embedded efficiency is the delivery of the output or outcomes for the baseline funding provided. For example;

- Capital enhancement programme – a scheme reaching OfT status.
- Capital renewals programme – replacement of the target volumes of carriageway surface or other projects required to keep our network safe and serviceable.
- Business or operational costs – improving or maintaining our effectiveness, for now and in the future.

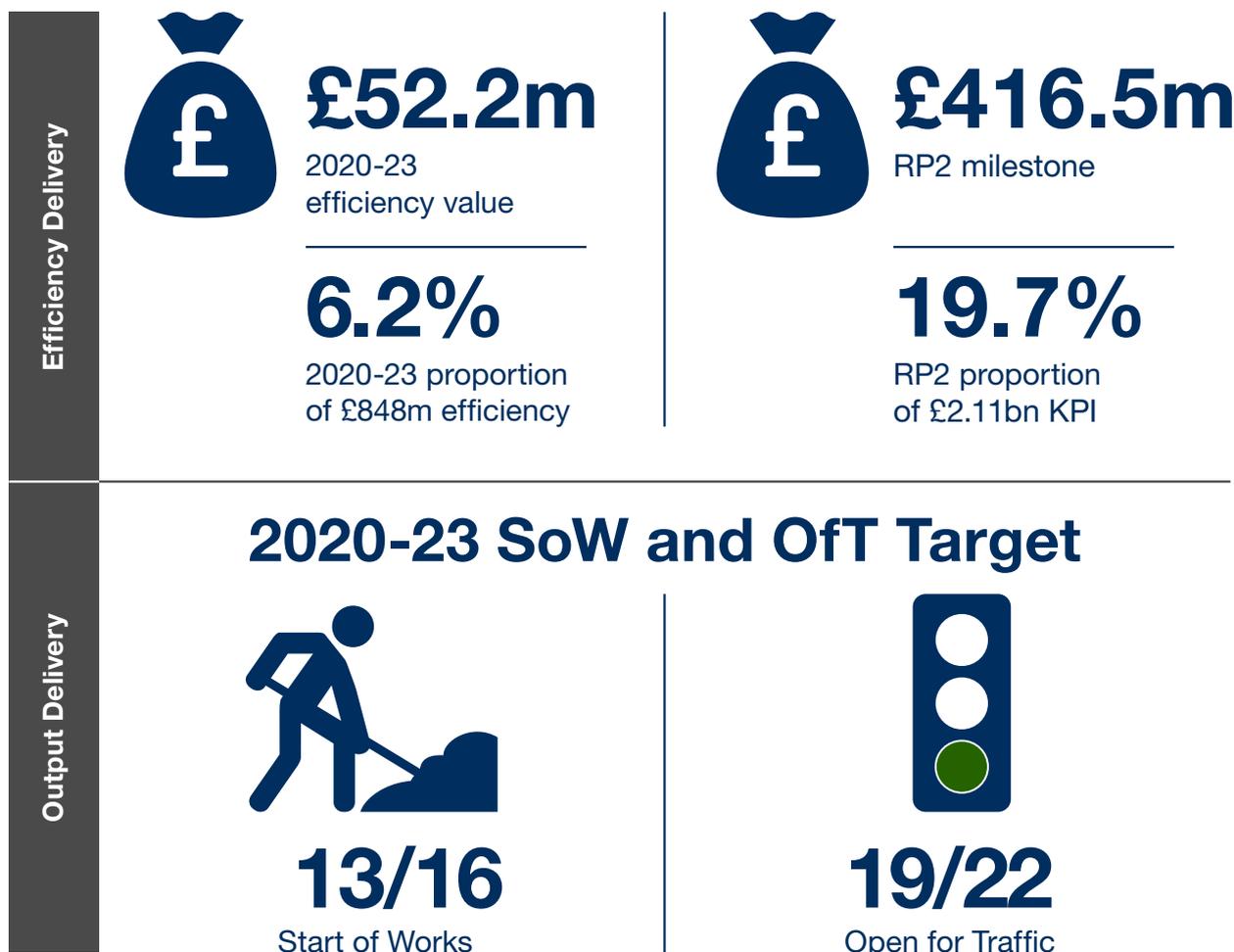
Both our Delivery Plan and our OE programme, discussed previously in *Section 2*, are continuing successfully and have contributed to achieving embedded efficiency. We have progressed well against our Delivery Plan as outlined in our published *Delivery Plan Update 2022-2023* and expect to continue this trajectory. Initiatives under our OE programme include ‘Intelligent Contracting’, which improves how we work on our contracts with suppliers, and ‘Fix Now’, which provides our highways inspectors the ability to complete small jobs on the SRN.

8.1. Capital enhancement programme

The capital enhancement programme is made up of large individual schemes which upgrade the SRN. They range from junction improvements, through to the construction of new bypasses and expressways. These schemes are designed to improve network resilience and journey time reliability, improve safety, and facilitate future economic growth.

The capital enhancements programme consists of schemes within the Regional Investment Programme (RIP), SMP, Complex Investment Programme (CIP) and the RIS3 pipeline. Embedded efficiency covers schemes which are scheduled to progress to SoW or OfT within RP2. It also covers the costs associated with delivery of enhancement schemes, such as the stocktake investigating the safety of smart motorways.

8.1.1. Outturn vs. baseline cost (primary evidence)



Nine schemes opened for traffic in 2022-23, bringing the RP2 total for the period 2020-23 to nineteen. We have spent within the post-efficient funding, after adjusting for higher than funded levels of inflation, to realise £52.2 million of efficiency value for the period 2020-23. For RP2 our internal milestone is to deliver £416.5 million of efficiency on capital enhancements. Our secondary evidence for capital enhancements, under appendix A, offers strong supporting evidence for this position covering >100% of primary efficiency.

Three schemes did not OfT as planned in 2022-23, but are due to OfT later in RP2;

- M6 Junction 21a-26
- M56 Junction 6-8
- M6 Junction 10

Four schemes started in 2022-23, bringing the RP2 total for the period 2020-23 to thirteen. We have agreed with the DfT changes to the start dates for the schemes that were due to start but didn't. These schemes were impacted by DCO decision delay or legal challenges, outside of our control.

8.2. Capital renewals

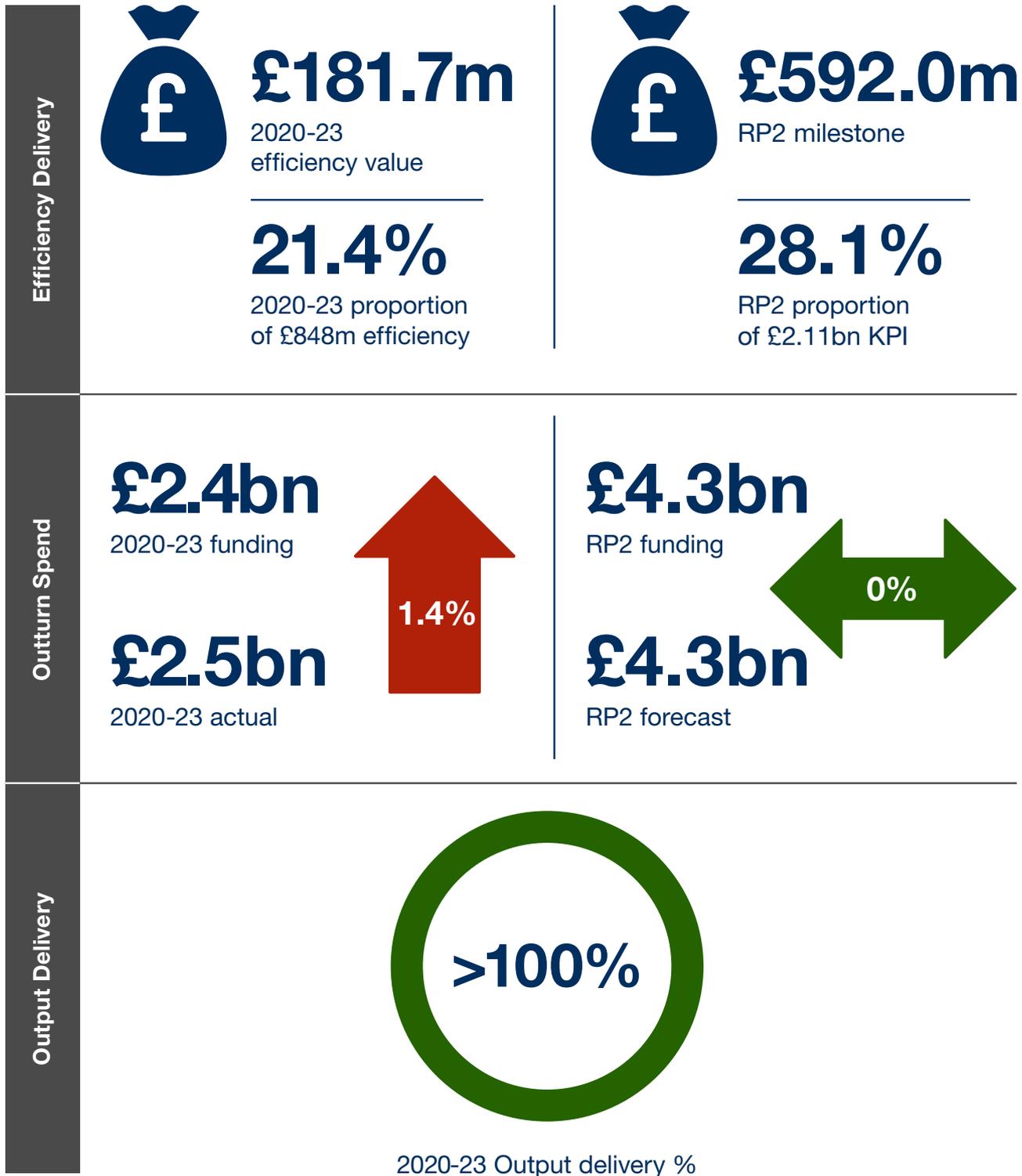
To keep traffic flowing safely we carry out around 2,000 capital renewal schemes each year as well as planned maintenance activity. This ensures that the network remains safe, serviceable, and effectively fulfils its intended purpose.

Our key deliverables under capital renewals are road resurfacing, the renewal of safety barriers, and the renewal of significant structures, which include bridges and viaducts. Additional deliverables not classified as key include road markings and drainage renewals, which are known as assurance deliverables. The key deliverables contribute most to ensuring that we continue to keep traffic flowing safely. They also account for most of our renewals spend and are therefore where most of the efficiency is delivered on capital renewals.

We are working to deliver strategically planned interventions, using risk-based forecasts and improving procurement, capability and processes. These actions help to ensure that we meet our commitment to deliver the agreed outputs within budget.

As we are now in the second half of RP2, we are working with ORR to agree the impact that under or over delivery of our agreed outputs will have on cumulative efficiency. This is important to ensure that we fairly receive 'credit' for over-delivery, and 'lose' efficiency for under-delivery. We are working with ORR to develop our calculation method which we anticipate being in use before the end of 2023-24.

8.2.1. Outturn vs. baseline cost (Primary Evidence)



For the period 2020-23 our spending on capital renewals was £2.5 billion, compared to the post-efficient funding of £2.4 billion. As the efficiency value is built-in to the post-efficient funding, despite not meeting the agreed funding, some efficiency is still realised (£181.7 million), though this is lower than anticipated.



We are currently working with ORR to calculate the impact of inflation alongside over or under delivery of our agreed outputs. Whilst we are not in a position to calculate the impact at the end of 2020-23, it is likely that the slight overspend on capital renewals was due to the impact of unfunded inflation, and we will be working through 2023-24 to assess this. Our secondary evidence for capital renewals, under Appendix B, offers strong supporting evidence for this position covering >100% of primary efficiency.

As mentioned, outputs are split into key and assurance deliverables. Both types are shown in Fig.8 below, outlining our actual outputs cumulatively achieved during the period 2020-23.

% Actual delivery vs. delivery plan targets (2020-23)

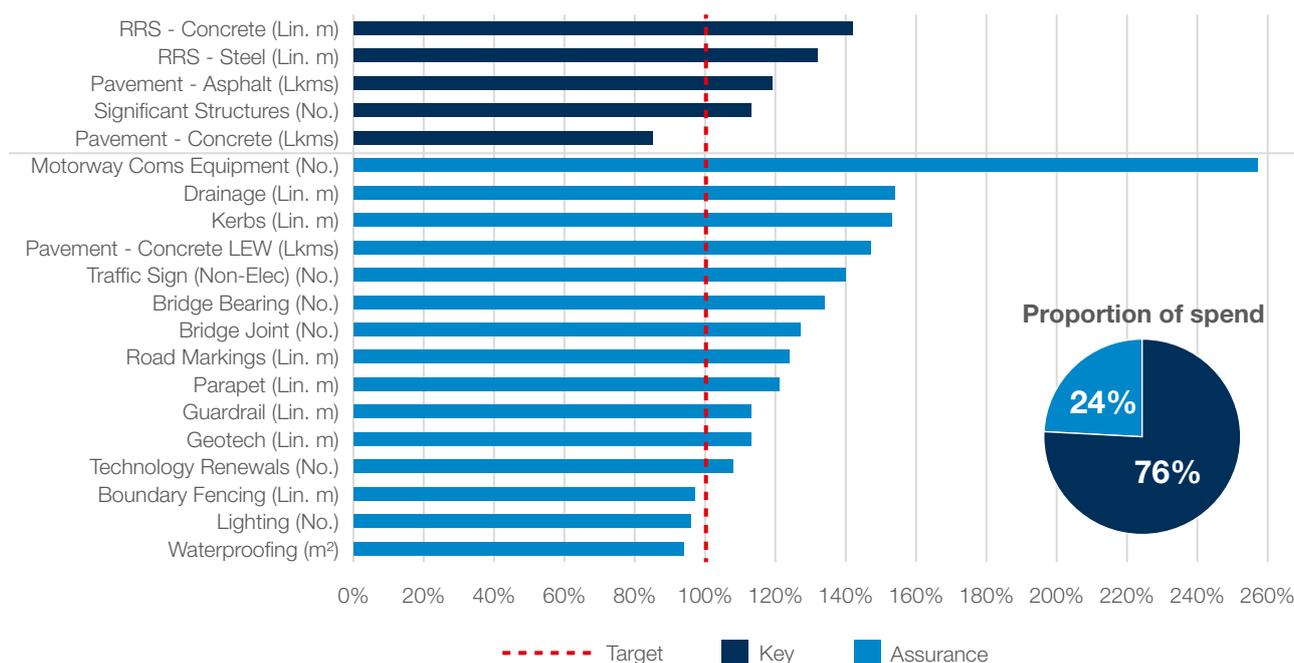


Figure 8: Asset renewal deliverables for 2020-23

For the cumulative period 2020-23 our output delivery against four of the five key measures including asphalt pavement, and steel and concrete road restraint systems (RRS), is over 100% of our target. Key asset classes account for the majority (76%) of our capital renewals spend. Performance against the target outputs for key asset classes gives good supporting evidence for performance against the capital renewals 2020-23 efficiency milestone.

As described earlier we are currently working with ORR to develop our calculation method for assessing the impact of over and under delivery of outputs for the five key asset classes, including assessment of our asphalt pavement depth. At the end of 2022-23 we are comfortable with the position as we are delivering outputs at >100% for the majority of asset classes. However, we are cognisant of issues such as inflation pressures that could impact delivery by the end of RP2, which highlights the importance of concluding this work. We anticipate that this will be calculated by the end of 2023-24.

We have not met our milestone for the key asset class of concrete pavement, achieving 85%. This was partly due to the deployment of concrete life-extension works (LEW) rather than full reconstruction. LEW extends the life of the asset but was not included in RP2 funding assumptions for the delivery of concrete roads outputs and so is not included in the delivery of key asset classes. We have a plan in place to enable delivery of the RP2 efficiency for concrete reconstruction.

Three of the 15 assurance measures did not meet their delivery targets during the period 2020-23. The reasons for this are known and include delays transitioning to new contract types, and there is a corresponding reduction in spend against these asset classes. These three measures remain of low concern due to both their low proportion of spend, and the fact that we have exceeded the target on all of the other assurance asset classes whilst remaining within the post-efficient funding. We continue to monitor them over the course of RP2.

8.3. Operational, business and maintenance expenditure (opex) and non-roads capital expenditure (capex)

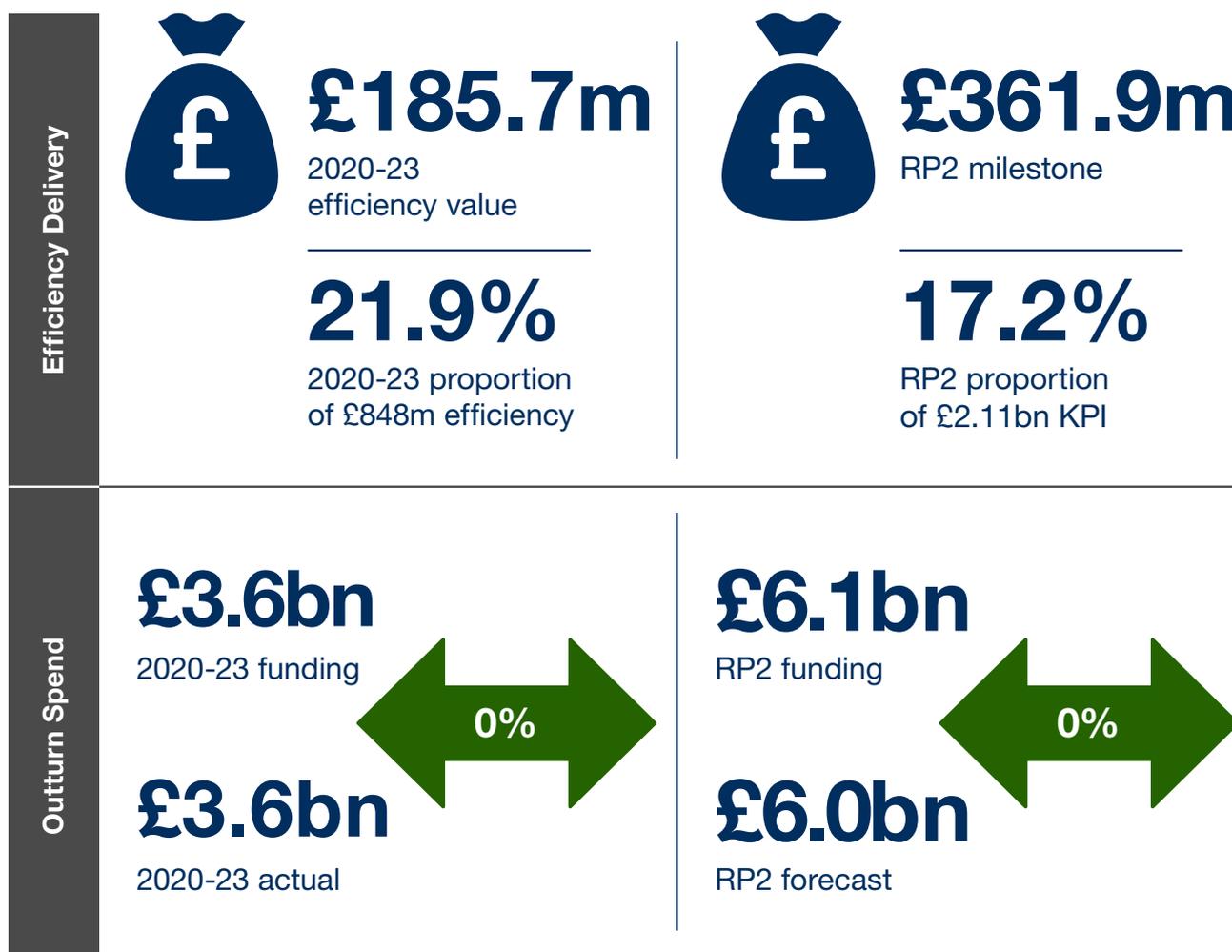
Opex costs are incurred through delivery of operations and maintenance activity. They include the provision of traffic officers who patrol the network managing incidents safely and quickly, control centres which undertake real-time traffic management across the country, information systems which provide customers with traffic data and alternative routes and weather stations and winter fleet which enable safe journeys in adverse weather.

It also includes outsourced routine and non-routine maintenance work to support and maintain our network assets, such as bridges, footpaths, embankments and safety barriers, helping reduce the need for major interventions and potentially extending the life of these assets. Routine maintenance includes grass cutting and emptying gullies. Non-routine maintenance refers to any unexpected work, such as emergency repairs from spillages or road traffic collisions. In addition, existing private finance initiative (PFI) contracts include efficiencies which were built into them through the funding model underlying the contract.

Non-roads capex includes all work of a capital nature not relating directly to enhancing and repairing the road network, such as spend on vehicles, offices and IT.

In RP2 both opex and non-roads capex has post-efficient funding. In business planning, we set out the high levels of customer service and capabilities we intend to provide. The primary evidence of efficiency is our ability to achieve, develop and sustain these business functions within the funding provided.

8.3.1. Operations, maintenance & business expenditure (opex) – outturn vs. baseline cost



We have delivered £185.7 million of efficiency on opex and have continued to ensure that we are fully operational and have delivered our commitments within the agreed post-efficient funding. This is against the backdrop of activity to reduce opex spend by 5% over the remainder of RP2.

As the efficiency value is built-in to the post-efficient funding, by meeting the agreed funding the efficiency is realised. Our secondary evidence for opex, under appendix C, offers strong supporting evidence for this position, representing 92% of primary efficiency.

There was a benefit to opex efficiency in 2020-21 and 2021-22 due to Covid-19. This resulted in savings through the shadow tolling mechanism on our PFI contracts as traffic volumes were low. However, this saving has diminished in 2022-23 as traffic volumes have returned to pre-pandemic levels.

While DfT agreed to fund some unforeseen cost pressures on opex in 2022-23, the compound effect of inflation is now built in to future prices and so the impact of high inflation in 2022-23 will be felt throughout RP2. This will affect future PFI payments, putting pressure on other elements of our opex budget.

An example of the outputs achieved within operations and maintenance is shown in Fig. 9 below. We have shown these as an annual average for RP2 as compared to the final year of RP1, 2019-20. It is not practical to summarise all opex outputs, and not all opex outputs are measurable. However, this helps to illustrate how we have delivered our operational and maintenance commitments. It shows that on key deliverables we have improved our performance within budget, and therefore delivered efficiently.

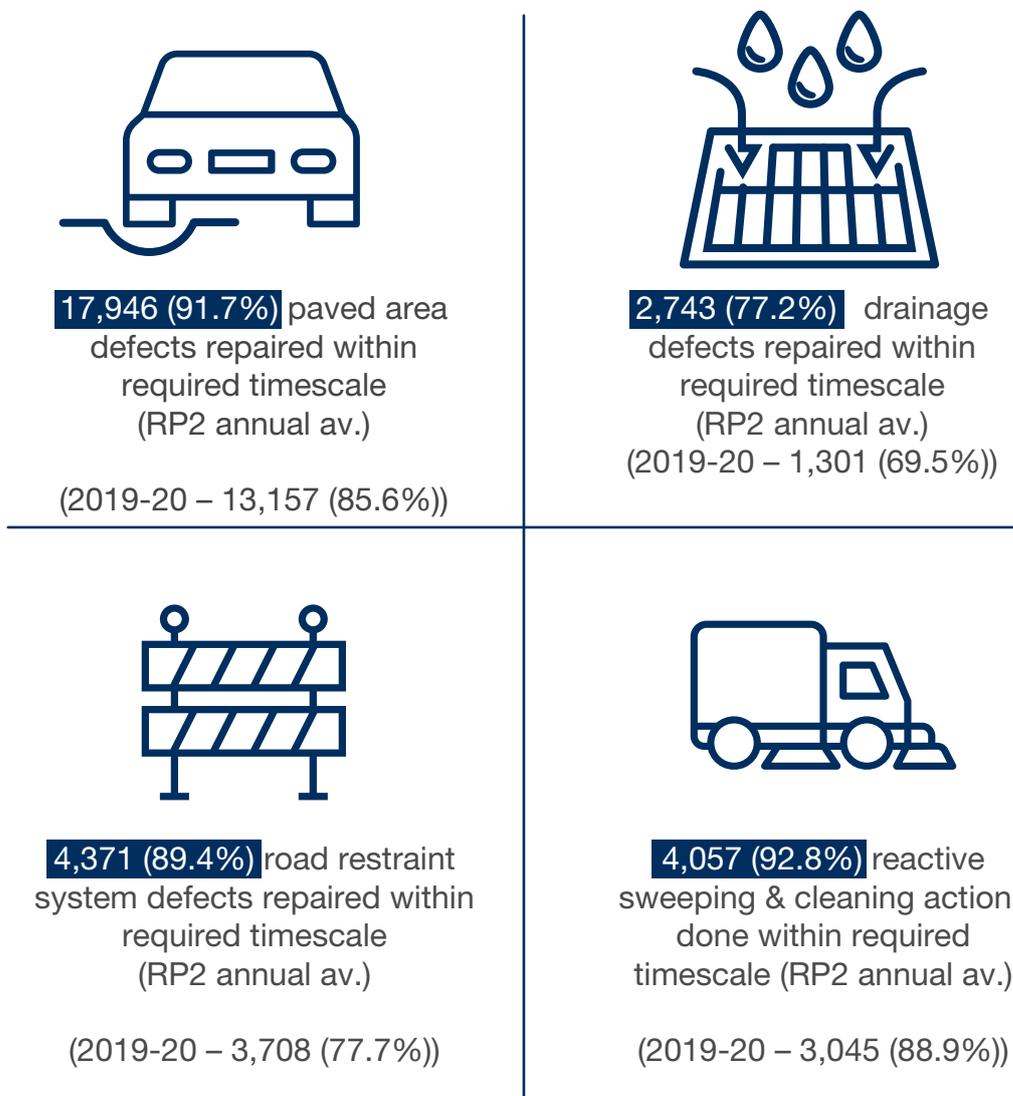
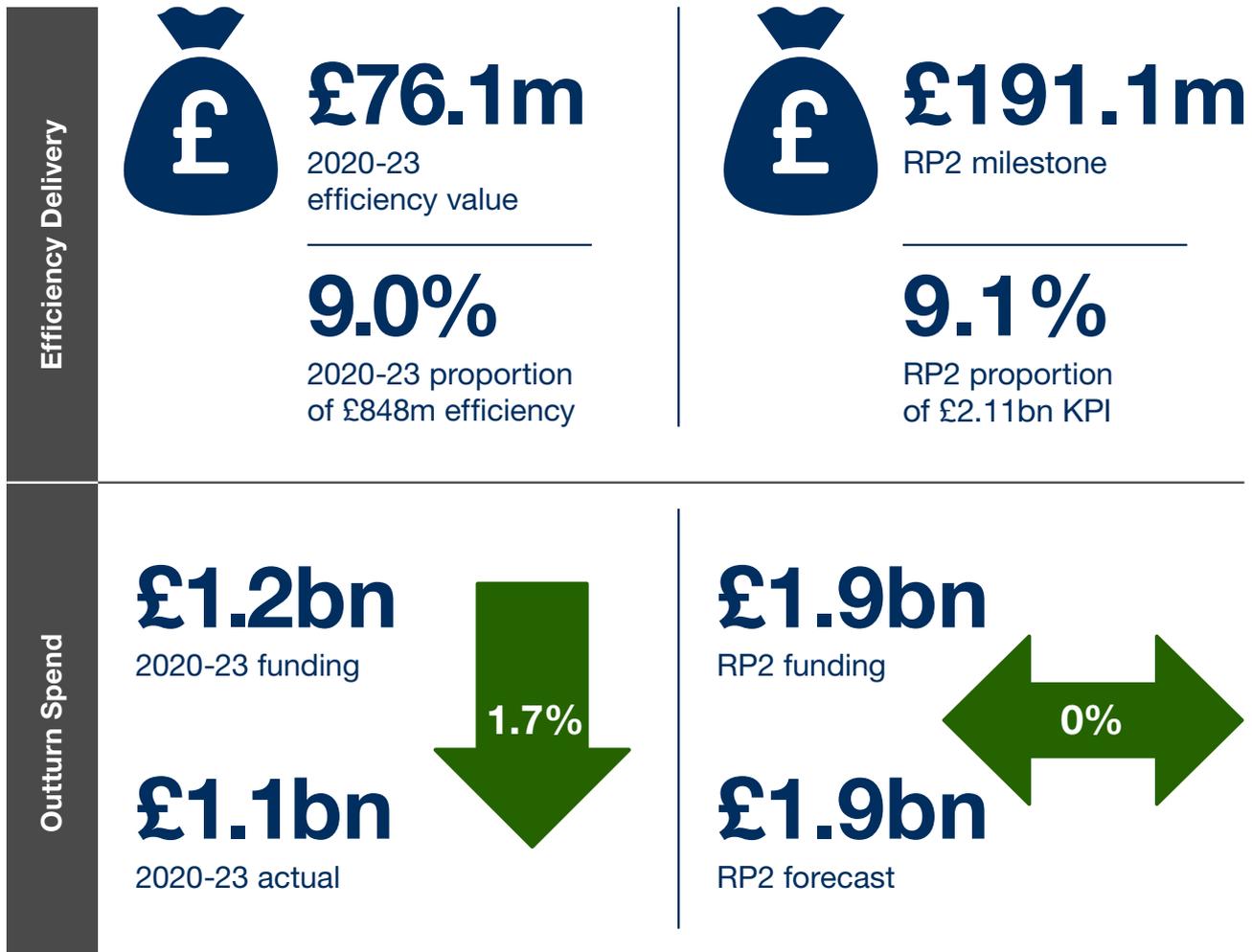


Figure 9: Illustrative opex operations and maintenance outputs

8.3.2. Non-roads capex – outturn vs. baseline cost



Around 50% of non-roads capex is capitalised salaries, with the remainder being capital schemes which do not fall under the enhancement or renewal programmes. This covers any capital spend ranging from IT systems and building leases to replacing our vehicle fleet.

We have delivered £76.1 million of efficiency on non-roads capex and have delivered our commitments within the agreed post-efficient funding. In reporting efficiency, we have considered schemes which have been re-programmed to be delivered later than originally anticipated. Our secondary evidence for non-roads capex, under appendix D, offers supporting evidence for this position representing 36% of primary efficiency.

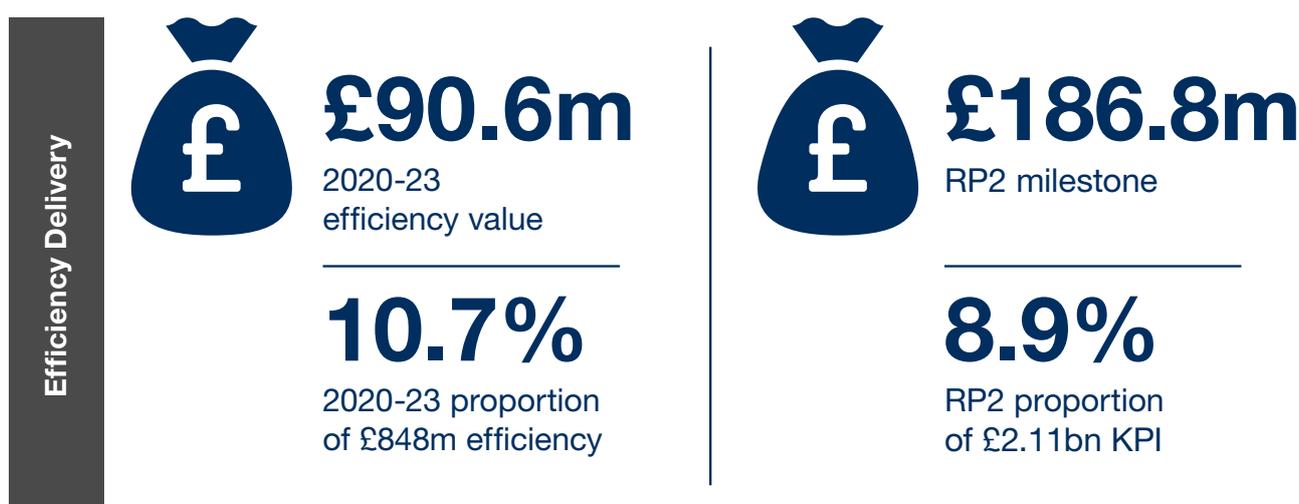
9. Measured efficiency

Measured efficiency, which as previously described consists of initiatives that benefit later RPs or reduce risk within RP2 but do not reduce funding for RP2, is evidenced by efficiency registers and assured case studies. It has two categories:

RP2 generated efficiency – this may not reduce the funding required for RP2 but will generally benefit later road periods or reduce risk within RP2. This type of efficiency applies to areas which did not include an efficiency challenge in the SBP and were therefore included as pre-efficient costs. In practice this mainly applies to new RIS2 capital enhancement schemes that are at early stages of development, but also includes Designated Funds and the RIS3 development programmes. Other efficiencies generated in RP2 which have most of their effect outside of the road period may include WLC benefits or maturity improvements. We primarily evidence RP2 generated efficiency through efficiency registers. We validate larger value efficiencies (over £1 million) by completing case studies to provide further detail on benefits and to support knowledge sharing.

Carryover efficiency – this is efficiency which was identified and secured in RP1 but is also realised in RP2. Carryover efficiency applies to efficiencies from all RIS1 projects and programmes with expenditure profiles which span the road periods. These have been captured, audited and reported using the RP1 detailed register approach and assurance process. These efficiencies have already influenced future expenditure but are distinct from RP2 embedded efficiencies and are included in the pre-efficient position. To determine the carryover value of RP1 efficiencies, we split the delivered efficiency by RP using earned value principles.

9.1. RP2 generated efficiency



We have delivered £90.6 million of RP2 generated efficiency during 2020-23 and we have a milestone of £186.8 million by the end of RP2.

RP2 generated efficiency primarily applies to six Tier 1 capital enhancement schemes that are in development. Tier 1 schemes are enhancement schemes that are above £500 million in estimated cost and are Nationally Significant Infrastructure Projects. They are subject to staged approvals by DfT, and we work closely with government in their development and delivery. The six schemes are as follows:

- A303 Amesbury to Berwick Down
- A417 Air Balloon
- A46 Newark Bypass
- A66 Northern Trans-Pennine
- Lower Thames Crossing
- M60/M62/M66 Simister Island Interchange

Also included are:

- Designated Funds
- RIS3 development programmes
- Any new schemes added to RIS2 through the agreed change control process
- WLC or maturity improvements

9.1.1. Evidence

We provide evidence to achieve the 2020-23 efficiency value of £90.6 million through case studies for scheme efficiencies over £1 million, and small efficiencies that are less than £1 million. The chart in Fig.10 provides the 2020-23 breakdown of RP2 generated efficiency delivered by programme and value.

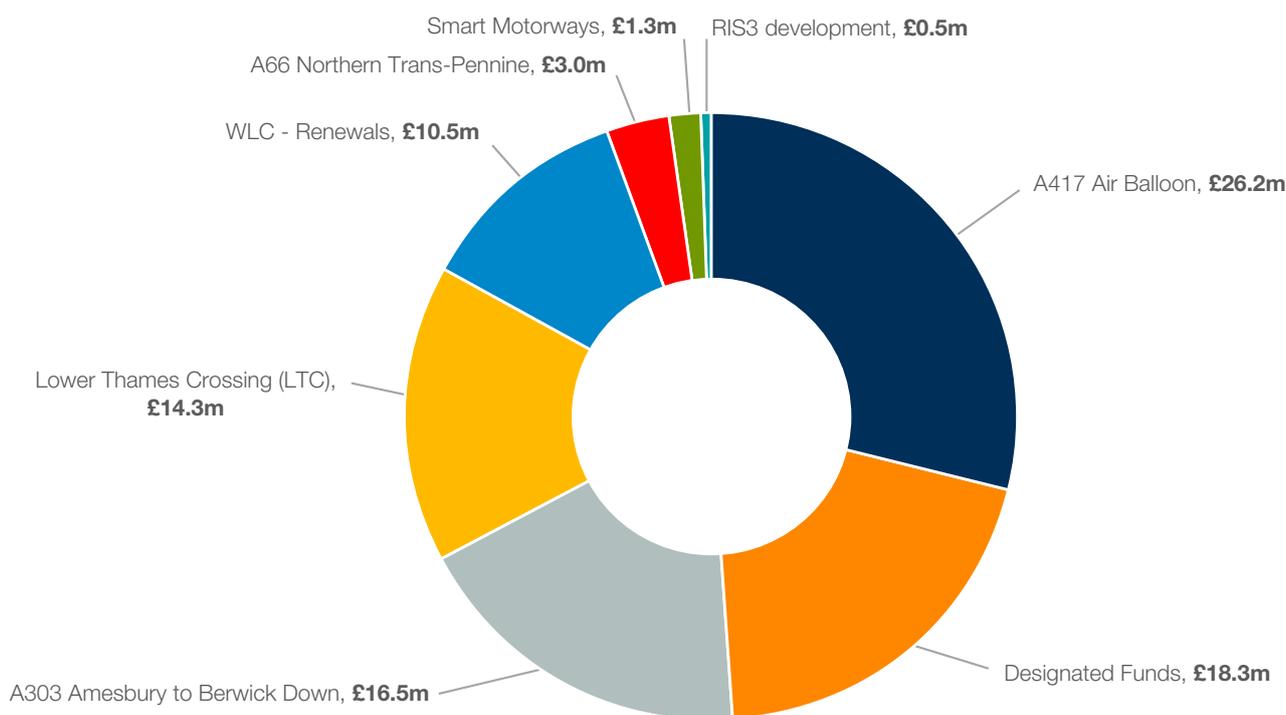


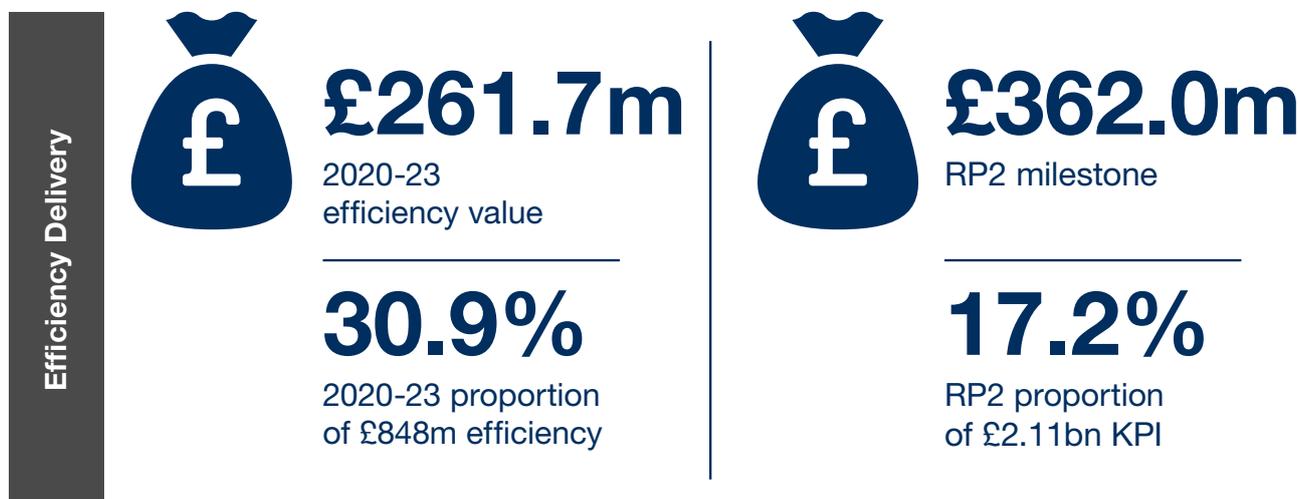
Figure 10: 2020-23 RP2 Generated primary evidence by programme and value

9.1.2. Whole life cost (WLC) savings

We have a License requirement to adopt a WLC approach to managing our assets, which means considering the cost over the asset life to increase taxpayer value for money. Where appropriate, we evidence WLC efficiency by case studies we share with ORR and report them against measured efficiency.

Of the £90.6 million RP2 generated efficiency, £24.6 million (27.2%) was delivered through WLC initiatives; £14.0 million from Designated Funds, £10.5m from Renewals, and £0.1 million from the Smart Motorways stocktake. An example WLC initiative is the replacement of traditional filament lighting with new LED lighting, which offers a longer lifespan, reduced maintenance, and lower energy costs over time.

9.2. Carryover efficiency



Carryover efficiency is efficiency created in RP1 that is realised in RP2. A schedule of relevant carryover projects and changes was agreed with ORR at the end of RP1 to be reported in RP2.

The 2020-23 planning assumption was to report £232.8 million of carryover efficiency. We have exceeded this by evidencing and reporting £261.7 million for the period 2020-23 and are on track to deliver the five-year efficiency milestone of £362.0 million.

9.2.1. Evidence

We deliver primary evidence through case studies and efficiency registers which are independently assured internally and reviewed by ORR. The chart in Fig. 11 provides the 2020-23 breakdown of carryover efficiency delivered by programme or directorate.

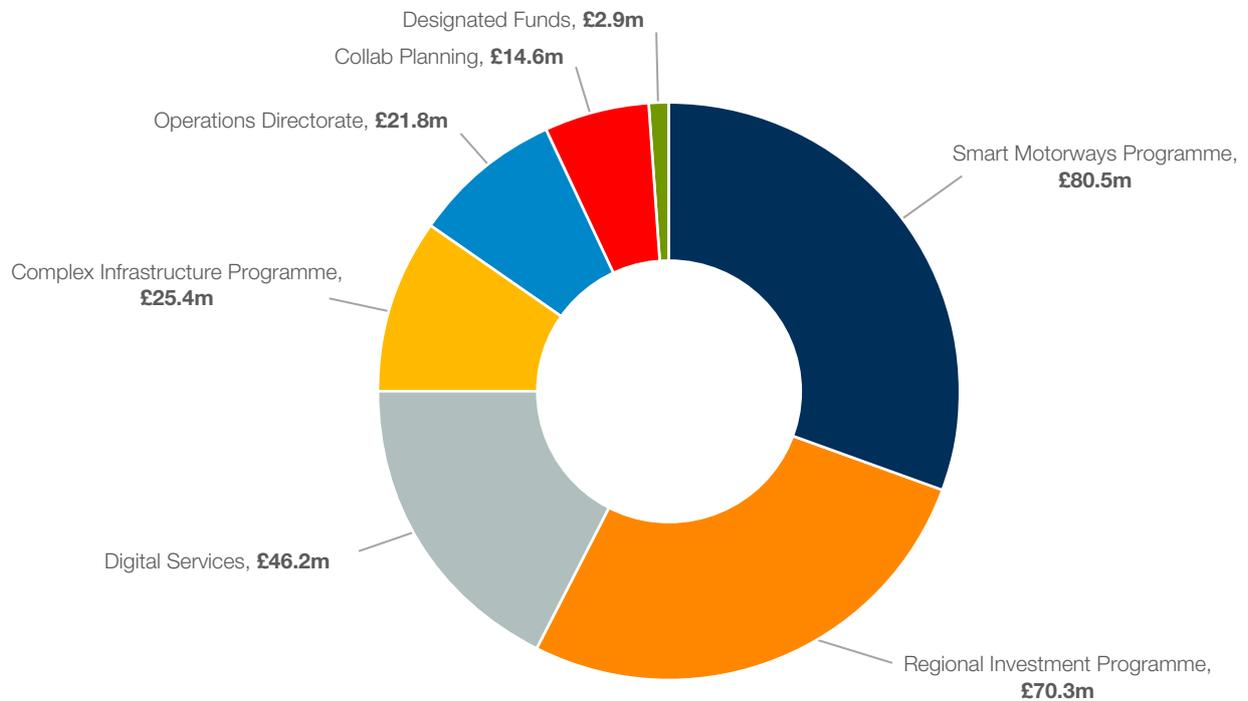


Figure 11: Breakdown of 2020-23 carryover efficiency by programme or directorate

10. Conclusion

The evidence showing that we have met the milestone for the first three years of RP2 demonstrates that we continue to make progress towards the five-year target. This has been achieved through close collaboration with our extended supply chain and maintaining focussed innovation in everything that we do.

Alongside the continuing good work that we do internally and with our supply chain, we have worked closely with ORR;

- Agreeing on the treatment of inflation and creating a credible methodology for determining its impact upon efficiency.
- Improvement of evidence (activity metrics) to support the primary position.
- Addressing previous areas of concern highlighted by ORR, such as progression on how over and under delivery of outputs will be treated for efficiency.

We recognise that there is much still to do and are working hard to limit the impact and, where possible, eliminate the current and potential future barriers to efficiency delivery. These include:

- Back-end loading of the delivery programme, with over 60% of the efficiency target scheduled to be delivered in the last two years of RP2.
- Unfunded headwinds including inflation, Covid-19 and taxation changes.
- The ongoing impact of securing DCO approval for schemes to proceed.

At the same time, we are progressing opportunities to generate higher levels of efficiency through our focussed cross-directorate transformation programme.

We have already started planning for RP3 by undertaking reviews designed to assess the efficiency benchmark position created by other regulated sectors and internal capability studies designed to quantify what will be possible. When the RP3 deliverables and overall funding have been agreed, we will be able to create a plan to deliver further efficiency in RP3.

11. Appendices

Appendix A – Capital enhancements secondary evidence

The secondary evidence for Capital Enhancements is a combination of:

- Case studies detailing major programme level initiatives – over £5 million.
- Metrics that capture the difference between the forecast and actual cost of construction activities – known as activity metrics.

Capital enhancements – case studies

We use efficiency registers to record changes that drive efficiency and create case studies for changes exceeding £5 million. They are subject to review by the project, Commercial, Audit and Assurance, and Customer, Strategy and Communications (CSC) teams and this ensures that all case studies are robust. The efficiency registers are also used to record efficiencies with an RP2 value below £5 million, which are still subject to assurance but where a case study is not required.

The baseline for this evidence is August 2018 on the assumption that initiatives carried out before this date have become business as usual (BAU) in RP2. This applies unless it is demonstrated that the change was either being piloted in RP1 with the intention to roll-out fully in RP2 or was not comprehensively deployed in RP1.

Nine schemes opened for traffic in 2022-23. Cumulatively, nineteen schemes have opened for traffic during RP2 to date. Efficiencies for these schemes have been entered onto our efficiency registers to a value of £68.1 million for the period 2020-23. This is summarised by scheme under Fig. 12. Of this, £35.1 million has been delivered through the RDP mentioned under Section 2 of the main body of the report, with the remaining value consisting of innovative engineering solutions outside of the RDP.

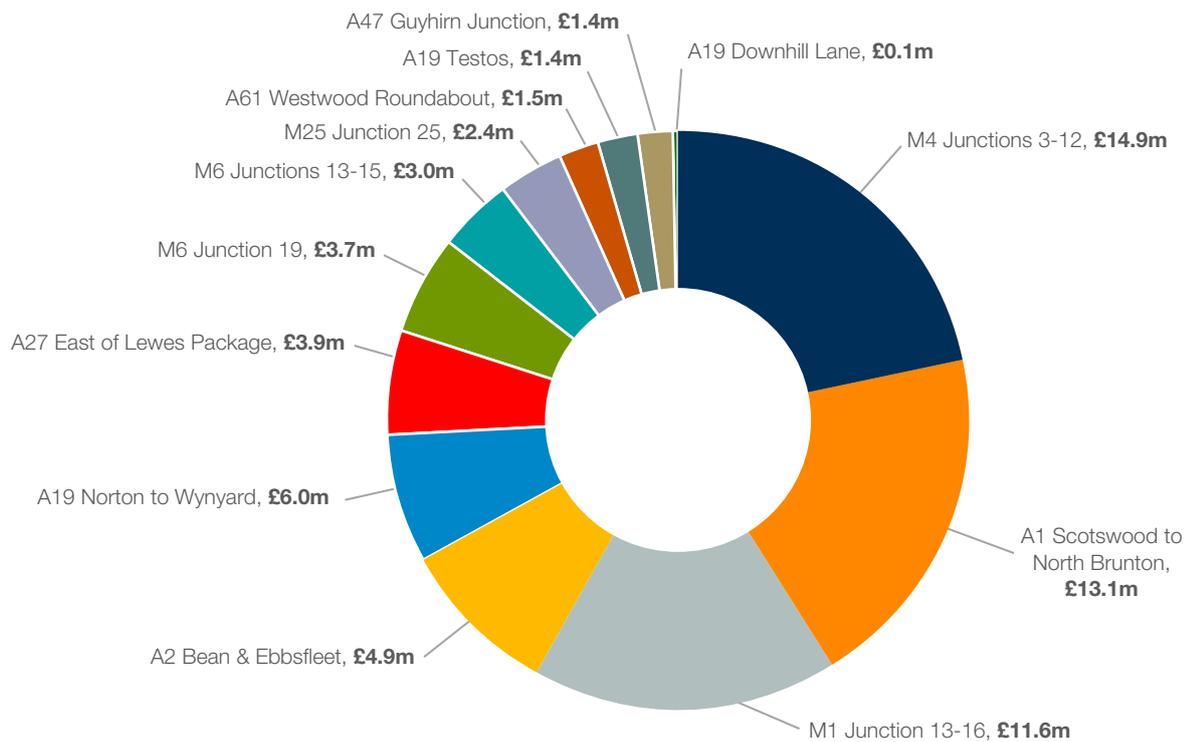


Figure 12: 2020-23 capital enhancements secondary evidence through efficiency registers by scheme

Capital enhancements – activity metrics

We have developed capital enhancement activity metrics based on the unit cost movement of our key scheme types. We have shared our approach with ORR. The scheme types covered for 2020-23 are;

- Smart Motorways all-lane running (SMP ALR)
- Bypass and widening

The approach has been to analyse the unit cost movement from the RP1 agreed pre-efficient baseline to the RP2 pre-efficient baseline. We examined the scope and cost profile of each scheme to assess the impact of scope movement, abnormal cost, inflation and RP1 efficiency.

For SMP ALR and bypass and widening, the schemes are intended to solve linear capacity issues. To derive activity metrics the difference between the derived RP2 pre-efficient and forecast outturn unit costs has then been applied to the equivalent number of additional lane kilometres (ALKm) to be delivered in RP2 based on earned value principles. As a result, the output activity metric for these types of schemes is £ per ALKkm.

SMP ALR and bypass and widening results are shown in Fig.13 below;

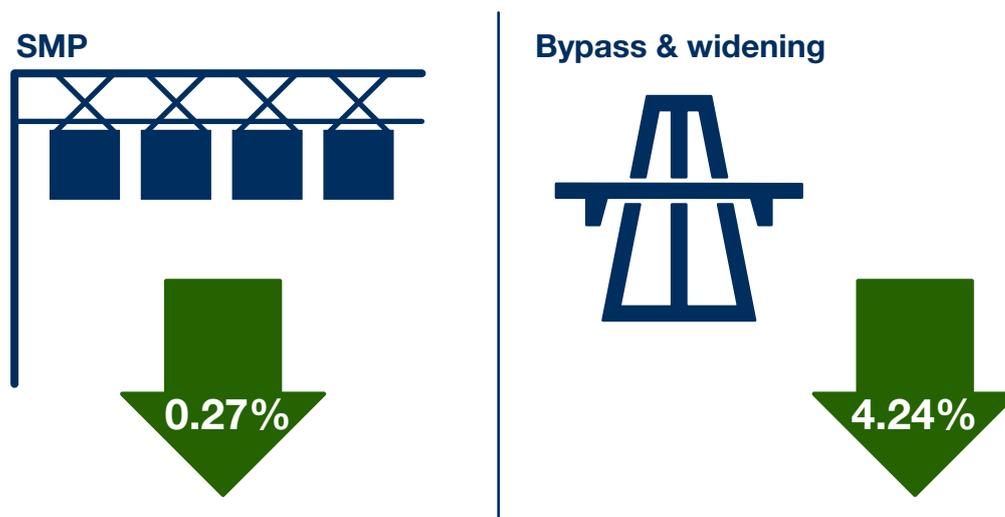


Figure 13: SMP ALR and bypass & widening scheme activity metrics
% change from baseline

We have calculated this as the percentage difference between the baseline cost per ALkm (£m/ALKm) and the RP2 £m/ALkm. Note that the results for SMP ALR are subject to the response to the TSC findings on ALR schemes.

In addition, we are working to develop activity metrics for major junction schemes. For major junctions, the schemes are required primarily to solve issues at one or more specific 'nodes', or to provide a new junction at a specific point to facilitate access. They are therefore less suited to measuring £m/ALKm. As a result, we are not presenting activity metrics for major junctions for 2020-23 but we are working with ORR to develop these for RP2.

Appendix B – Capital renewals secondary evidence

Secondary evidence for renewals is split into two elements;

- Case studies for efficiencies exceeding £5 million.
- Activity metrics.

Capital renewals – case studies

Efficiency registers are used to record efficiency at scheme or programme level which leads to the creation of case studies exceeding £5 million. They are subject to review by the Project, Commercial, Audit and Assurance, and CSC teams to ensure that all case studies are robust. We also use the efficiency registers to record efficiencies with an RP2 value below £5 million, which are still subject to assurance but where a case study is not required.

The baseline for this evidence is August 2018 on the assumption that initiatives carried out before this date have become BAU in RP2. This applies unless it is demonstrated that the change was either being piloted in RP1 with the intention to fully roll-out in RP2 or was not comprehensively deployed in RP1.

Registers can also be populated with initiatives that fall below the £5 million threshold. In such instances we do not produce a case study but the principle and calculation of the initiative is still subject to internal assurance.

There was £235.3 million of efficiency reported against 2020-23 through efficiency registers. We have worked to ensure that the case studies cover a high proportion of reported primary efficiency (>100%), offering strong supporting evidence for the in-year milestone. This is summarised by value, type and title under Fig. 14.

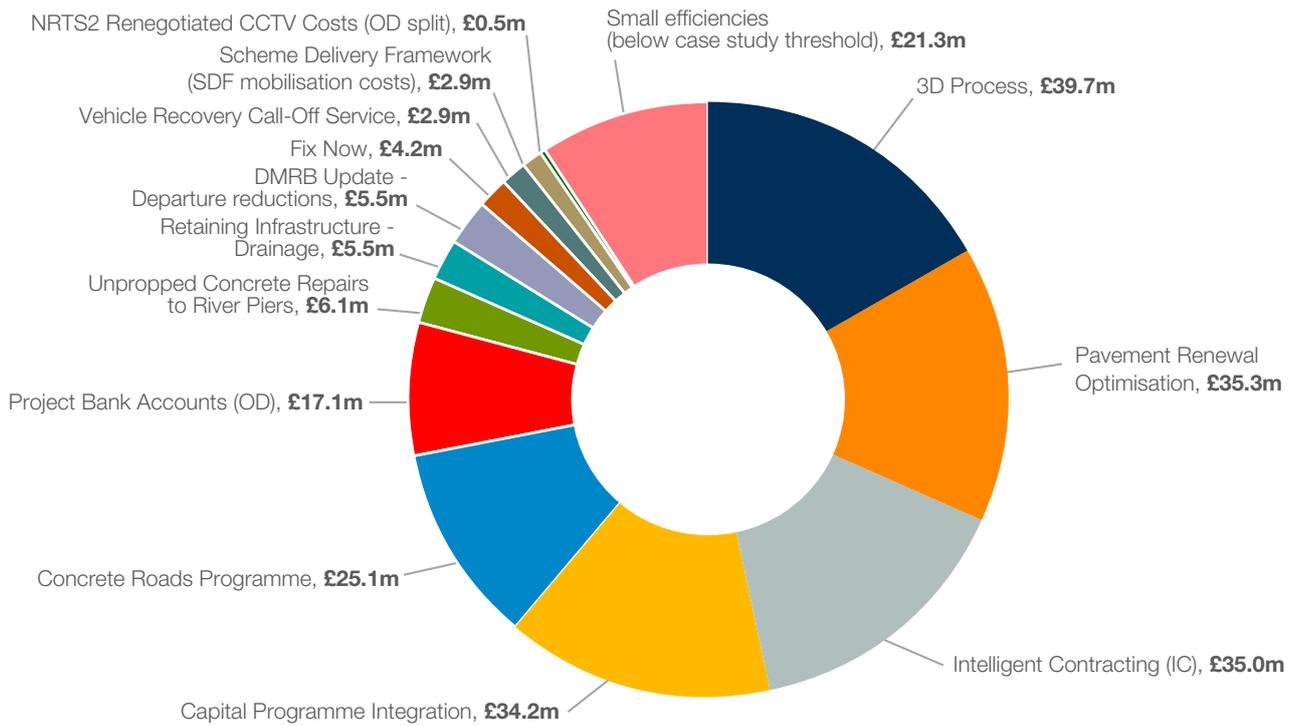


Figure 14: 2020-23 summarisation of capital renewals case studies by title and value

Capital renewals – activity metrics

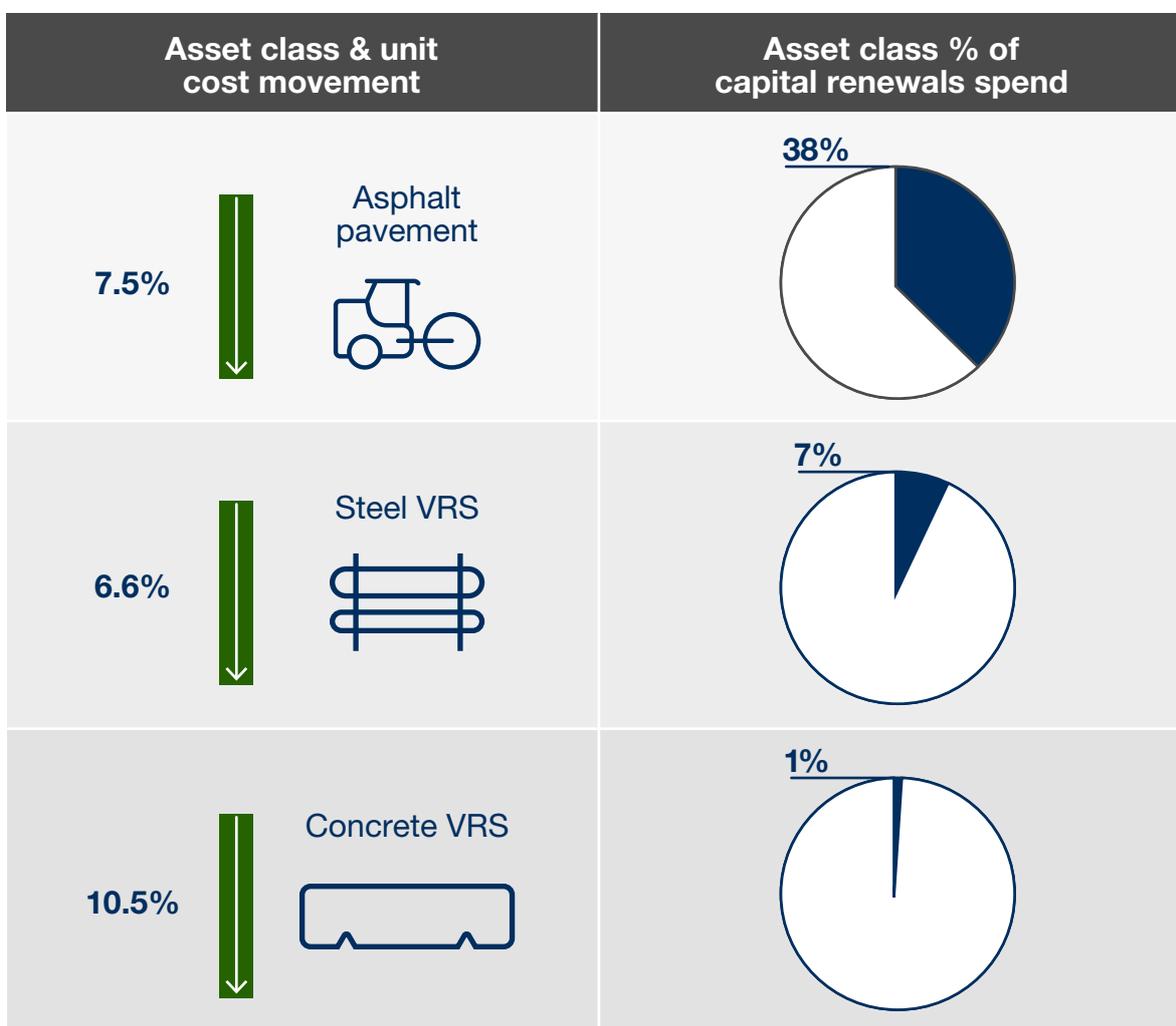
We have developed capital renewals activity metrics based on the unit cost movement of our key asset deliverables and have shared our approach with ORR. We have retained the principles of our analysis from previous years of RP2.

We have developed these by categorising schemes into the relevant asset class using an analytically-assured set of rules. We set a baseline £/unit – for instance, £ per lane km – using the available RP1 data, and then analyse RP2 data to derive the RP2 £/unit. The baseline £/unit and RP2 £/unit are then compared and this gives us an idea of how investment in each asset class is performing. To ensure a like-for-like comparison between the baseline and RP2, the output quantities – or activity – are normalised for both the baseline and RP2.

For 2020-23 our activity metrics cover the asset classes of asphalt pavement, steel VRS, concrete VRS, and structures (bridge joints), alongside newly introduced metrics in 2022-23 for concrete pavement, and structures (waterproofing). This rounds out the five key asset classes.

The activity metrics support the 2020-23 capital renewals efficiency position. Using the change from baseline and asset class proportion of overall spend, we can offer a good proxy measure by showing the reduction this has had on the overall capital renewals spend. The breakdown of this in Fig.16 shows a 7.5% reduction in the unit cost of asphalt pavement schemes (2020-22 – 10.7%), an 6.6% reduction for steel VRS schemes (2020-22 – 8.4%), an 10.5% reduction for concrete VRS schemes (2020-22 – 11.5%), a 0.9% reduction for bridge joint structures schemes (2020-22 – 1.2%), a 4.5% reduction for waterproofing structures schemes (2020-22 – n/a), and a 4.4% increase for concrete pavement schemes (2020-22 – n/a). The % movement from baseline to now has seen a slight decline from 2020-22 to 2020-23, due to inflationary pressure.

Fig.15 also shows the proportion of spend that each asset class constitutes of the overall capital renewals spend. This is presented to help demonstrate that the activity metrics support the capital renewals primary position.



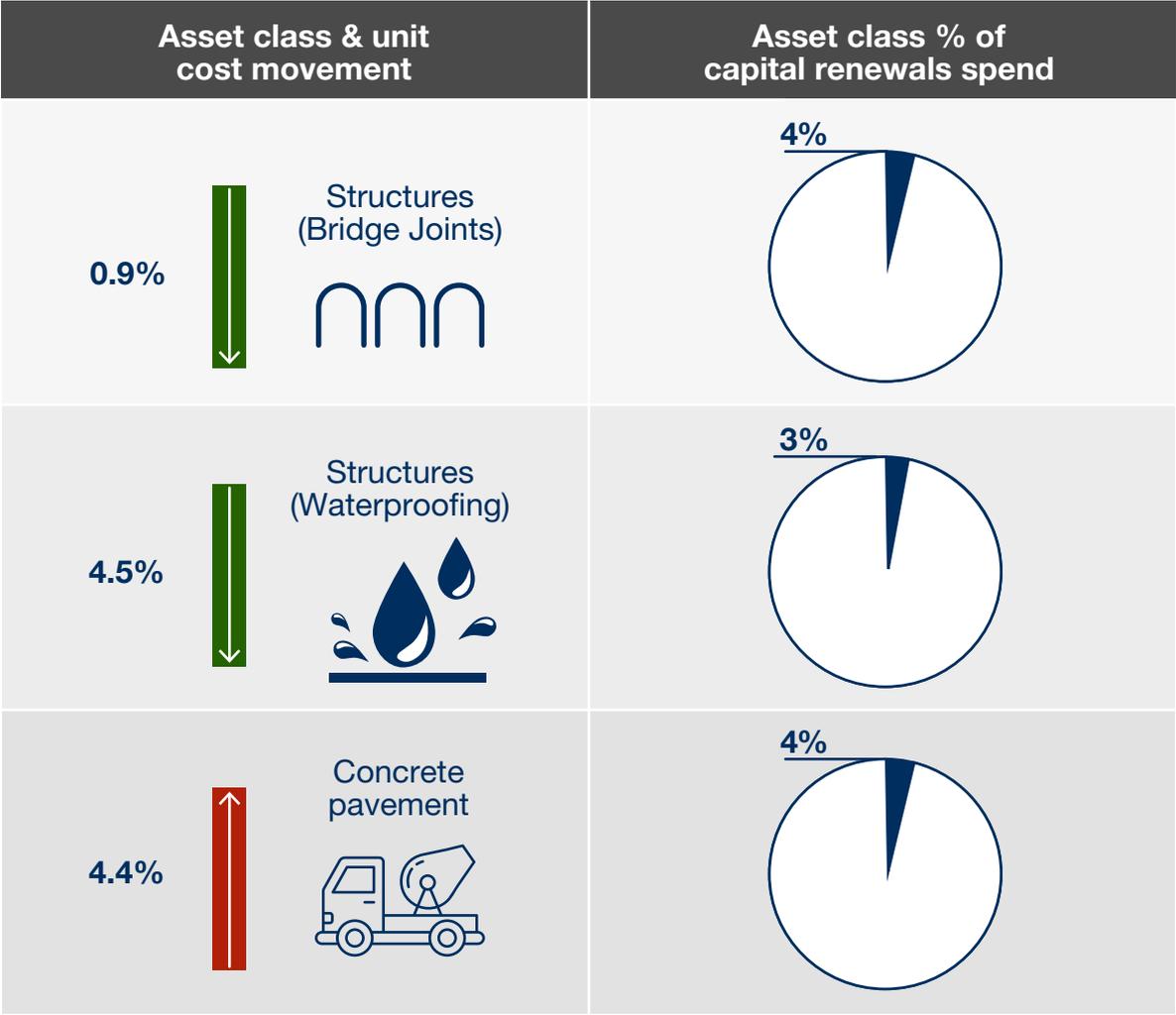


Figure 15: RP2 activity metric results, cumulative position end 2020-23

Appendix C – Opex secondary evidence

We provide secondary evidence for opex through efficiency registers, mainly comprising case studies with an efficiency value higher than £5 million. We supplement these by assured efficiencies with a value below £5 million which do not have an accompanying case study.

There was £170.3 million of efficiency reported during 2020-23 through case studies and efficiency registers. We have worked to ensure that the value of these cover a high proportion of reported primary efficiency (91.7%), offering strong supporting evidence for our in-year milestone. The value and title of these is detailed in Fig.16.

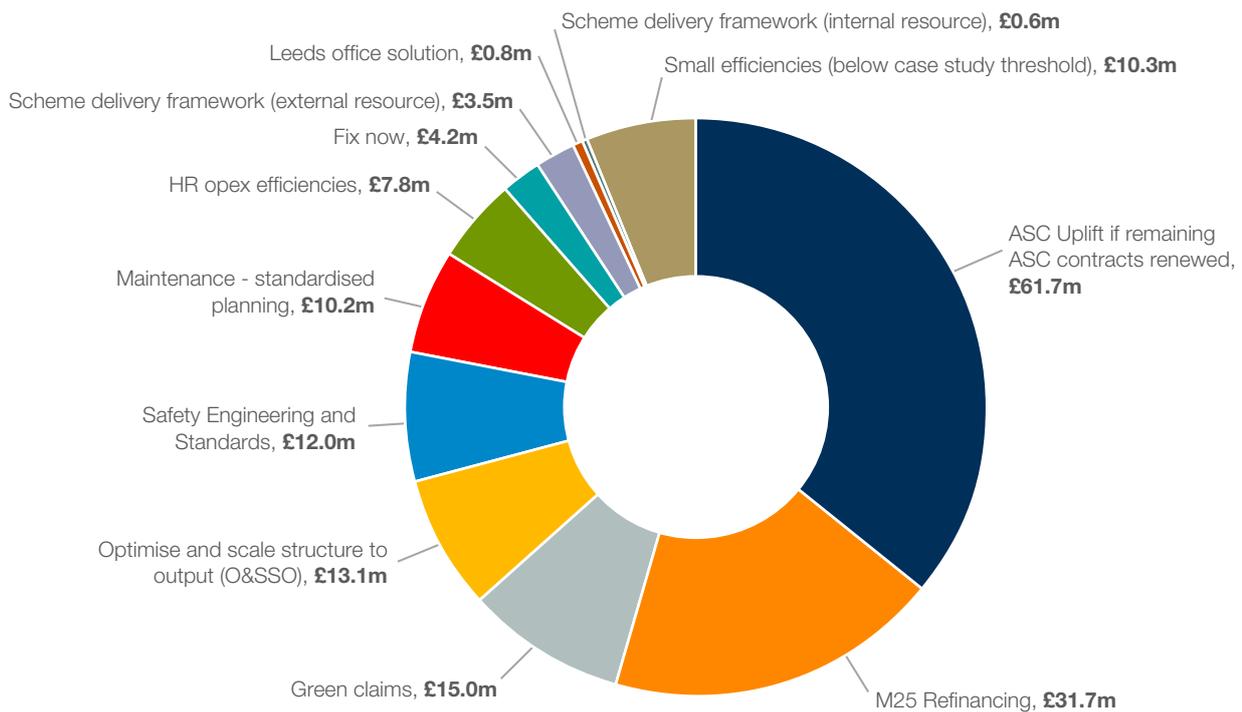


Figure 16: 2020-23 summarisation of opex case studies by title and value

Regarding activity metrics on opex, we continue to have discussions with ORR on the most suitable approach to help in their assessment of our performance.

Appendix D – Non-roads capex secondary evidence

We provide secondary evidence for non-roads capex through efficiency registers, mainly comprising case studies with an efficiency value higher than £5 million. We supplement these by assured efficiencies with a value below £5 million which do not have an accompanying case study.

There was £26.5 million of efficiency reported against 2020-23 through efficiency registers. We have worked to ensure that this evidence covers a proportion of reported primary efficiency (36.3%), offering supporting evidence for our in-year milestone. The value and title of the case studies used as evidence is detailed in Fig.17.

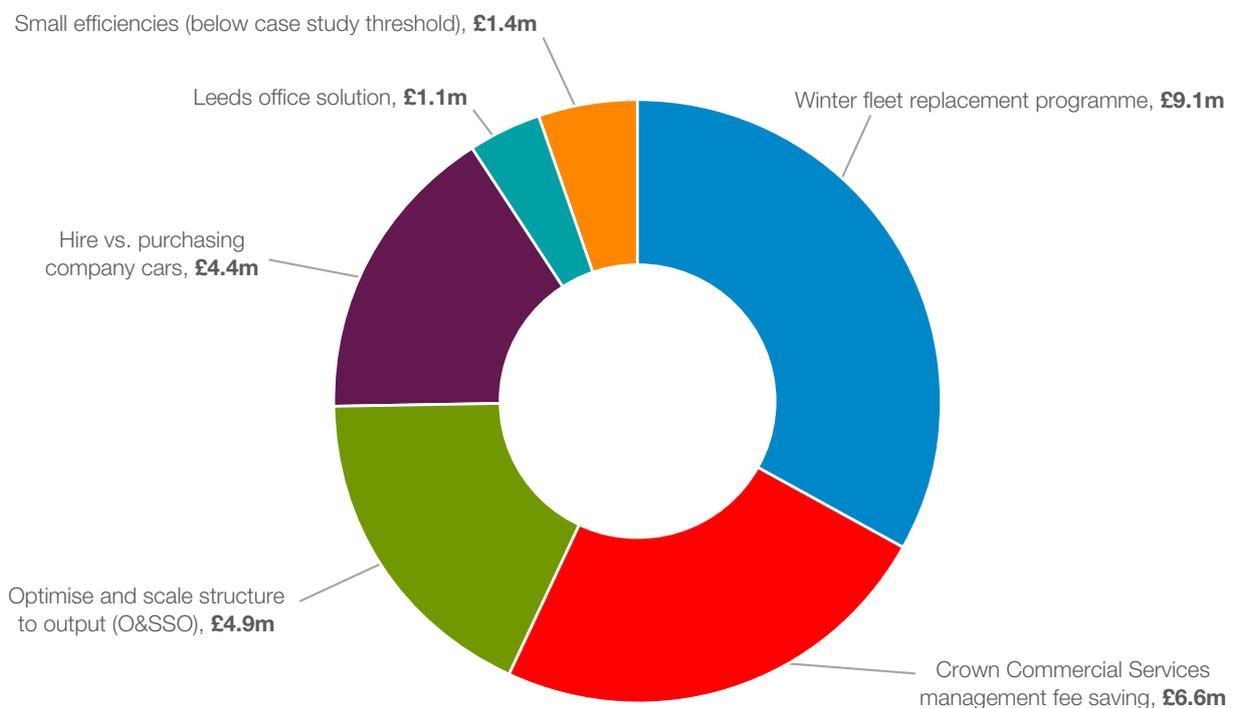


Figure 17: 2020-23 summarisation of non-roads capex case studies by title and value

Regarding activity metrics on non-roads capex, we continue to have discussions with ORR on the most suitable approach to help in their assessment of our performance.

Appendix E – Capability

Capability is the interaction of resources to deliver our safety, customer and delivery objectives. We have recognised the need to work collaboratively with our supply chain, increasing our individual and combined capability, to meet the challenges of current and future road periods. The change programmes initiated to date are summarised earlier in the main body of the report under Fig.5 of *Section 2*.

This comprehensive programme has been ongoing since the start of RP1 and covers every part of the business. It is summarised in Fig.18 below.



Figure 18: National Highways Transformation Programme initiatives

It is coordinated through the National Highways Transformation Programme and is designed to cover all of our current and future corporate objectives:

- People development (our most important resource):
 - Externally benchmark to compare functional headcount against other relevant bodies.
 - Reduce reliance on external resource.
 - Upskill our people and our supply chain.
 - Measure and increase levels of engagement.

- Process development:
 - Apply lean techniques to all activities.
 - Remove processes which do not add value.
 - Increase collaboration and remove silos.
- Digital Technology and data management:
 - Increase commercial intelligence, financial control and asset stewardship maturity.
 - Utilise technology innovation in everything we do.
 - Make timely decisions based on robust information.

At the same time, we are investing in research and development to identify, validate and implement technological innovation which will enable us to become more effective in the future. Opportunities are shared with our supply chain and other publicly funded organisations to ensure that the benefit to the economy is maximised.

Appendix F – Glossary of terms

Carryover	Efficiency which has been identified and secured in RP1, but is also realised in RP2.
Central Risk Reserve (CRR)	A contingency within our funding for unexpected risks.
Change Control	A formal process where significant funding impacts, and any resultant effect on efficiency, are agreed with DfT and ORR.
Designated Funds (Des Funds)	During the first road period, the government created a series of designated funds, to address a range of issues over and above the traditional focus of road investment, including: growth and housing, innovation, environment, air quality, and cycling, safety and integration.
Efficiency and Inflation Monitoring Manual (EIMM)	Document that sets out the approach National Highways uses to define, demonstrate and provide evidence of its delivery of efficiency in RP2. It also sets out how the comparison between forecast (assumed) inflation and actual inflation will be evaluated during the RP.
Efficiency Register	This is a standard document that captures efficiencies, as well as associated reporting information, value, evidence and approval information. Each entry in the register is supported by a justification as to the reason why the entry is considered to be an efficiency claim.
Embedded efficiency	Efficiency that reduces the funding required at project level and is already built into the post-efficient business plan. Applies to projects and programmes of work that had a defined scope and schedule when the SBP was drafted, or outputs against which efficiency can be measured and against which post-efficient cost baselines have been set.
Lever	Repeatable efficiency initiatives that can be utilised across multiple schemes and programmes of work.
License	Sets out the Secretary of State’s aims, objectives and conditions for National Highways.
Measured efficiency	Efficiency that is split into two types, RP2 Generated and Carryover. Measured efficiency will not reduce the funding for RP2 but will, in general, benefit later road periods or reduce risk within RP2. This includes whole life cost efficiency cases.

Nationally Significant Infrastructure Project	Major infrastructure projects which require a type of consent known as ‘development consent’ under procedures governed by the Planning Act 2008.
Open for Traffic (OfT)	The date at which a scheme has completed and opened to receive traffic.
Post-efficient	Where we challenged historic costs and delivery approaches and then built efficiency expectations into the SBP; further detail on this can be found in the EIMM.
Pre-efficient	Costs prior to implementing the principle of post-efficient costs.
Primary evidence	For embedded efficiency, this is the delivery of the output or outcomes for the funding provided. For measured evidence, this is the use of efficiency registers, case studies and efficiency guides for demonstrating efficiency.
Regional Delivery Partnerships (RDP)	An initiative to incentivise suppliers to improve safety and deliver increased value. This approach contains incentives for results including: shorter and more accurate roadworks; more efficient, local buying; innovation; and increased environmental benefits.
Renewals Risk Reserve (RRR)	A contingency within our funding for unexpected risks.
Road Investment Strategy (RIS)	Government’s long-term strategy for the strategic road network.
RP2 Generated	Efficiency that does not reduce the funding required for RP2, but will, in general, benefit later road periods or reduce risk within RP2. This type of efficiency will apply to the areas of the plan which did not include an efficiency challenge in the SBP and were therefore left as pre-efficient costs.
Secondary evidence	Supplementary evidence used to support primary evidence, which is provided through efficiency registers, case studies, and activity metrics
Smart Motorways Project (SMP)	Motorways that use technology to manage the flow of traffic, controlled from National Highways control centres. They monitor traffic and set variable speed limits and signs to help keep the traffic flowing safely and freely.
Start of Works (SoW)	The date at which construction formally starts on a scheme.

Strategic Business Plan (SBP)	National Highways response to government's second Road Investment Strategy (RIS2). It presents the balancing between maintaining and operating the SRN safely, and providing new capacity where it is needed.
Strategic Road Network (SRN)	The network of roads managed by National Highways, comprising motorways and some A-roads.

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