



# Road Investment Strategy 3: Procurement & Project Management Capability Review

Final Report

24 February 2023



# Contents

1. Introduction 2

2. Capability analysis 5

3. Scope for efficiencies 29

4. Next steps 44

Appendix A – Abbreviations 45

Appendix B – Documents considered 48



# 1. Introduction

## Background

National Highways was set up by the UK Government in 2015. Its responsibilities include delivery of a major investment programme, as defined in the Department for Transport's (DfT) Road Investment Strategy (RIS). In March 2020, the DfT published its second RIS (RIS2) covering Road Period 2 (RP2) which runs from April 2020 to March 2025. This allocated £27.4bn<sup>1</sup> of funding to National Highways, of which £14.2bn was for a defined list of enhancement projects to the Strategic Road Network (SRN). RIS2 also defined efficiency savings that National Highways is expected to deliver in RP2, with no defined target specifically for capital enhancement projects, to afford National Highways flexibility in how to delivery this target across all areas of its business.

The Office of Rail and Road (ORR) is the independent Highways Monitor, responsible for monitoring and enforcing the performance and efficiency of National Highways (England only). The ORR also provides advice to the Secretary of State for Transport on the development of plans for future road periods.

RIS3 will set out plans for Road Period 3 (RP3) which is expected to run from April 2025 to March 2030. National Highways is currently undertaking early strategic planning work in readiness for RIS3, with its draft Strategic Business Plan to be developed in readiness for submission to the ORR for scrutiny in 2023-24.

## Purpose of this review

ORR and National Highways jointly commissioned Nichols to undertake this 'Road Investment Strategy 3: Procurement and Project Management Capability Review' (hereafter 'review') to: provide an assessment of National Highways' current capabilities in the areas of procurement and project management, in the context of changes implemented by the company since 2015 and its maturity compared to other organisation; to assess its ability to deliver further improvements in its capability and to establish an improvement trajectory to the end of RP3 and, given this improvement; provide a view on the level of efficiencies that might be achieved to the end of RP3.

---

<sup>1</sup> Adjusted to £24bn via the Government's Spending Review 2021.



The review is focused on the major road improvement projects delivered by National Highways. It does not consider all of National Highways' capital investments, including its 'Designated Funds'. A concurrent review will address National Highways' Asset Management maturity and capability in respect of the procurement and management of its maintenance and renewals projects.

The review is expected to inform National Highways' Draft Strategic Business Plan (DSBP), which will detail its plans for delivering the performance requirements set out in the Government's third RIS (RIS3). The review is also expected to inform ORR's RIS3 Efficiency and Deliverability Review, which is an assessment of the level of efficiency that National Highways proposes to achieve during RP3, as set out in the DSBP.

## Review scope

The remit for the review set out the scope into three phases of activities, including contacting comparator organisations:

- **Phase 1** – provide a comparative assessment of National Highways current procurement and project management capability and maturity mid-way through RP2, drawing on recent reviews undertaken by ORR and National Highways.
- **Phase 2** – document National Highways improvement plans and assess its potential ability to make improvements to its procurement and project management capability during the remainder of RP2 and during RP3.
- **Phase 3** – determine the scope for potential range of efficiencies that could be reasonably expected from improvements in National Highways' procurement and project management capability.

The review scope of 'Procurement and Project Management' was clarified to cover the following:

- Procurement management – covers the full extent of commercial and procurement management for major enhancement projects.
- Project management – covers both project and programme management of National Highways' major projects, but not management of the whole capital portfolio (which includes capital renewals and other capital funded elements).



## Review methodology

The review considered the results of relevant previous reviews undertaken by ORR and National Highways, appraisal of a significant body of documents provided by National Highways, and a programme of meetings with key National Highways stakeholders, in the period July to October 2022. It was progressed collaboratively throughout, monitored jointly by National Highways and ORR through bi-weekly progress meetings, workshops and steering group meetings.

## Terminology used in this report

Table 1 defines the key terms that have a specific meaning in this report.

Term	Definition
Capability	The potential ability of an organisation to create a specified business outcome using a combination of people, systems and processes
Efficiency	An improvement in the relationship between inputs and outputs (the final product delivered) or outcomes (the measured impact of the output) achieved; as per National Highways' Efficiency and Inflation Monitoring Manual
Efficiency lever	An initiative, or group of activities, that have been designed, implemented and embedded to achieve efficiency
Project	An individual scheme that forms part of a programme
Programme	A collection of projects developed and delivered through a similar commercial model and organisational structure to achieve the outcome sought
Portfolio	The collection of all capital programmes set out in a Road Period/RIS; within National Highways, this includes major projects, capital renewals and other enhancements.

Table 1: Terminology

## Acknowledgment

We would like to thank National Highways for its management of the review process, and the information, openness and support provided in undertaking this review.



## 2. Capability analysis

### 2.1 Introduction

The following extract is from the review remit:

“The overarching objective of this commission is to determine the efficiencies that National Highways should be capable of achieving through improvements to the way that the company procures and manages its capital investments in the Strategic Road Network”.

Unpacked, and in expanded form this led to the review purpose: to provide an assessment of National Highways’ current capabilities in the areas of procurement and project management, in the context of changes implemented by the company since 2015 and its maturity compared to other organisations; to assess its ability to deliver further improvements in its capability and to establish an improvement trajectory to the end of RP3 and, given this improvement; provide a view on the level of efficiencies that might be achieved to the end of RP3.

This purpose sets the high-level context for the capability analysis undertaken, supplemented by the following clarification:

“Improvements to the way that the company procures and manages its capital investments in the Strategic Road Network” was clarified as being improvements to the capability of National Highways Major Projects (MP) and Commercial & Procurement (C&P) Directorates to deliver capital enhancement projects, excluding portfolio management undertaken by Capital Programme Management (CPM) and renewal projects undertaken outside of MP.



This chapter describes the various capability analysis activities undertaken to meet the review purpose:

1. Derive a bespoke set of 'material capabilities' for MP and C&P that, when improved, should yield efficiencies in the costs of capital enhancements (section 2.2).
2. Assess National Highways current capability at the mid-point in RP2 against these material capabilities (section 2.3).
3. Assess National Highways current transformation programmes to understand their potential impact on capability improvement during RP2 and RP3 (section 2.4).
4. Mapping capability improvement plans against the material efficiency capabilities (section 2.5).
5. Consult other organisations as to their plans for capability development in the context of achieving efficiencies in capital enhancement costs (section 2.6).

This is followed by conclusions drawn from across the various elements of analysis (section 2.7) and completes with an overall summary on capability (section 2.8).

## 2.2 Activity 1 – derive 'material' capabilities

As one of the outputs of the review is an assessment of potential efficiencies (as distinct from other benefits) leveraged from capability improvements, we needed to identify those capabilities that are most relevant ('material') to enabling potential efficiency opportunities. We agreed, during the inception phase of the review, that we would keep the capability assessment at a high-level and therefore aimed to identify no more than fifteen 'material' capabilities covering both MP and C&P. Materiality in this context means those capabilities that are deemed to have the potential to unlock efficiencies in capital enhancements costs. As a first step we used a 'value chain' approach to identify the main activities undertaken within the project lifecycle, referring to the stages in National Highways Project Control Framework (PCF)<sup>2</sup> that, through capability improvement, would either yield cost efficiencies through:

1. Reducing the time and/or cost of the current stage that an activity takes place.
2. Reducing the time and/or cost of a later stage in the lifecycle by improving the activity outputs in the current stage; for example, improved design outputs reducing later construction costs.

---

<sup>2</sup> PCF is a framework which sets out how National Highways governs, manages and delivers its major improvement projects throughout their lifecycle. All major road projects are progressed through the PCF framework, which is split into three phases and, within this, seven stages of activity.



We used these two forms of cost efficiencies as value criteria for our high-level value chain analysis.

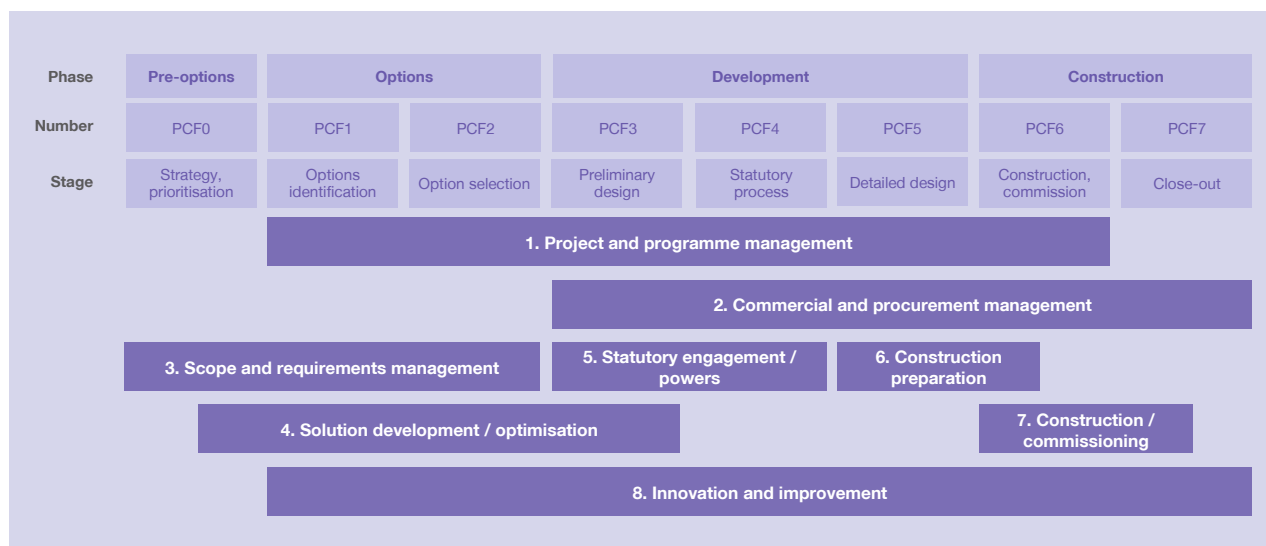


Figure 1: Value Chain activities mapped onto the project lifecycle

The output of the value chain analysis was that eight main blocks of activities were identified that were deemed to have a direct impact on reducing project costs; i.e. matching the value criteria. Figure 1 illustrates the eight blocks of activities showing when in the project lifecycle they are undertaken. The National Highways Project Control Framework (PCF) was used as a reference for the project lifecycle.

Underneath each of the eight activity blocks, we then identified material capabilities necessary to leverage cost efficiency saving. Fourteen capabilities were identified and are shown in Table 2 below. We reviewed and amended the value chain and capabilities following a workshop with National Highways.

Value Chain Activity Block	Material Capabilities
1. Project and Programme Management	1a. Manage projects 1b. Manage programmes
2. Commercial and Procurement Management	2a. Manage categories 2b. Manage procurement 2c. Manage contracts
3. Scope and Requirements Management	3a. Have clarity of strategic fit, scope, requirements and benefits
4. Solution Development and Optimisation	4a. Optime the solution 4b. Optimise deliverability
5. Statutory Engagement and Consents	5a. Undertake statutory engagement and secure consents



Value Chain Activity Block	Material Capabilities
6. Construction Preparation	6a. Manage construction preparation
7. Construction and Commissioning	7a. Construction and commissioning
8. Innovation and Improvement	8a. Embed continuous improvement 8b. Maximise the value and impact of experience and knowledge 8c. Innovate

Table 2 Material capabilities

### 2.3 Activity 2 – current capability assessment

Part of our remit was to undertake a comparative assessment of National Highways current procurement and project management capability and maturity mid-way through RP2. We were also directed in the remit to use existing capability reports and materials to undertake the assessment. We requested available material and undertook a desk review to complete our assessment of current capability. The documents provided and reviewed are listed in Appendix B. Figure 2 below shows the key assessment reviews undertaken since 2017, producing the existing capability reports and materials used as inputs to the desk review of current capability assessment.

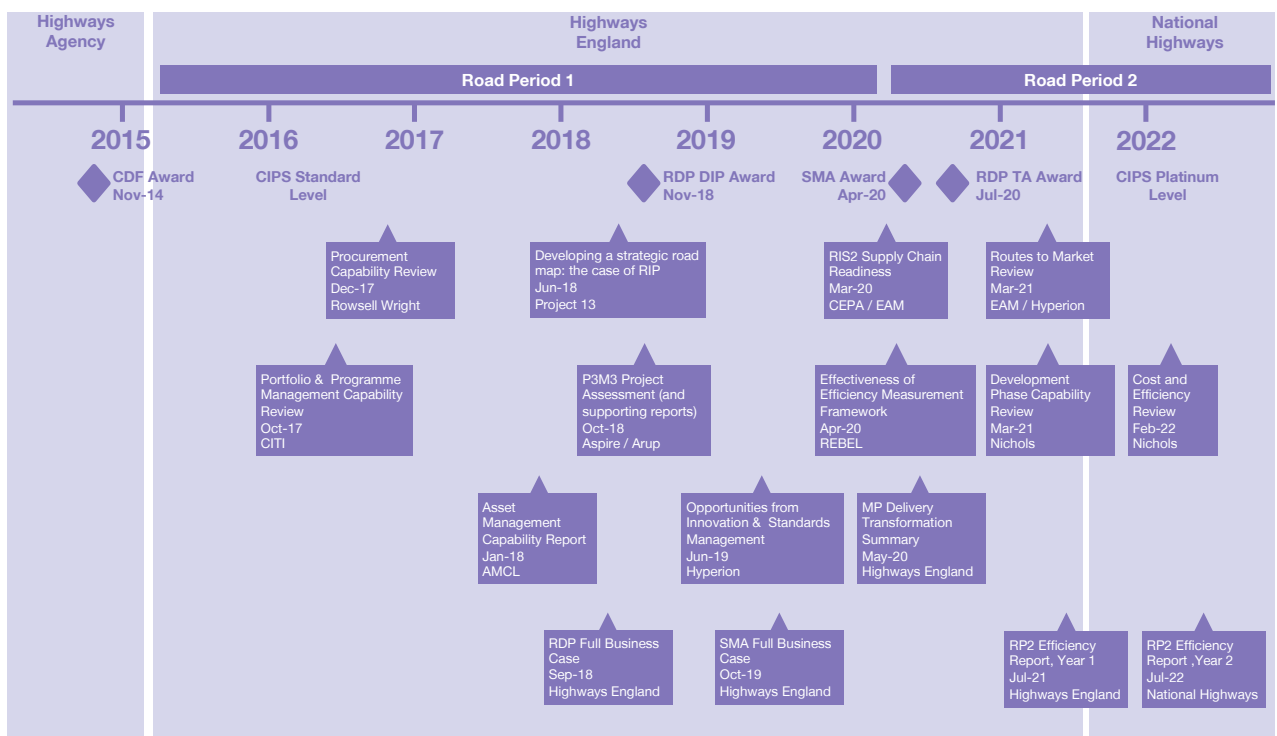


Figure 2: Summary of timeline of relevant events and previous assessment reviews

The output of the desk review of existing capability reports and materials was an assessment for each of the fourteen material capabilities as either 'Below Threshold' or 'Above Threshold'. Table 3 contains the assessment criteria used. A standard benchmark capability maturity score<sup>3</sup> of 2.5 was used as the primary criteria, where this could be derived from a previous capability assessment reported in one of the source documents<sup>4</sup>. The other criteria were either used to moderate the primary criteria score if the source document was several years old or in lieu of not having a primary criteria score.

'Below Threshold' assessment criteria	'Above Threshold' assessment criteria
<ul style="list-style-type: none"> <li>• Maturity assessment scores less than 2.5 or identifies the capability as 'less developed' or similar</li> <li>• Last assessment is 'aged' (more than two years old) and little evidence of improvement since</li> <li>• Best practice use is stated, however insufficient evidence of being applied</li> <li>• National Highways is referenced in a source document to be lagging in this capability compared with other similar organisations</li> </ul>	<ul style="list-style-type: none"> <li>• Maturity assessment scores 2.5 or above or identifies the capability as 'more developed' or similar</li> <li>• Last assessment is 'aged' (more than two years old) and significant improvement work has been undertaken since then</li> <li>• Evidence of the actual use of best practice, for example, Project 13</li> <li>• National Highways is referenced in a source document to be a leader in this capability compared with other similar organisations</li> </ul>

Table 3: Capability assessment criteria

Where the available documents did not provide sufficient evidence to support a desk based capability assessment we recorded this in the assessment outputs. We held review meetings with nominated representatives from the C&P and MP directorates to validate the results of our desk assessment. Table 4 below contains the output of the validated desk assessment.

Value Chain Activity	Material Capability	Below Threshold	Insufficient evidence	Above Threshold
1. Project and Programme Management	1a. Manage projects			X
	1b. Manage programmes	X		
2. Commercial and Procurement Management	2a. Manage categories			X
	2b. Manage procurement			X
	2c. Manage contracts			X

<sup>3</sup> Best practice in maturity models that are to objectively assess capability in terms of 5 levels, ranging from 1 (least mature) to 5 (most mature).

<sup>4</sup> For example – Highways England P3M3 Summary pack (003) – Project Programme and Portfolio Management Summary, Aspire 2021.

Value Chain Activity	Material Capability	Below Threshold	Insufficient evidence	Above Threshold
3. Scope and Requirements Management	3a. Have clarity of strategic fit, scope, requirements and benefits			X
4. Solution Development and Optimisation	4a. Optimize the solution 4b. Optimize deliverability	X		X
5. Statutory Engagement and Consents	5a. Undertake statutory engagement and secure consents			X
6. Construction Preparation	6a. Manage construction preparation		X	
7. Construction and Commissioning	7a. Construction and commissioning		X	
8. Innovation and Improvement	8a. Embed continuous improvement 8b. Maximise the value and impact of experience and knowledge 8c. Innovate	X  X		X

Table 4: Output of the desk review capability assessment

## Notes to Table 4:

- 1a Manage Projects' capability – there is clear evidence<sup>5</sup> that National Highways' has developed its project management capability and hence its 'Above Threshold' overall assessment. Not all elements of this capability have progressed though, specifically 'schedule risk management'. In a recent (Nichols) review<sup>6</sup> for ORR we examined evidence of significant schedule risks in recent years, that have caused slippages to many of National Highways major projects. The impacts and causes of these slippages are described in detail in the review report. While many of the causes are not within National Highways control, the review focused on National Highways schedule risks management, with recommendations for this made alongside work it is undertaking to strengthen this capability.

<sup>5</sup> 2018 Aspire P3M3 assessment and 2021 Aspire review.

<sup>6</sup> Preparing for RIS3 enhancements – delivery timescales and risks review by Nichols, February 2022.



- 1b Manage Programmes – the CITI review<sup>7</sup> undertaken in 2017 did not use a formal assessment framework for benchmarking. Our assessment of ‘Below Threshold’ is based on the 2021 Aspire review<sup>8</sup> which summarised current position as “No significant progress towards a programme management framework, it remains primarily a project environment.” A framework would contain the standards, techniques or planning guidelines to underpin capability.
- 2a Manage categories, 2b Manage procurement, 2c Manage contracts – our assessment of ‘Above Threshold’ is based on the National Highways assessment report for the 2022 Chartered Institute of Procurement & Supply (CIPS) platinum awards. For ‘Category Management’ the report states “Strategic Procurement Strategies are developed in consultation with business stakeholders and include a suite of analysis which informs the business approach to route to market. Market intelligence is a key part of the SPS and includes: - Supplier Engagement - Supply chain mapping - Market insight and landscape - Supplier Capability and Capacity - Supplier financial health.” For ‘Manage Procurement’ the report states “Influencing change within the supply chain can be seen through several avenues. A significant area driven by the C&P Executive Director through the procurement team can be seen in the departments approach to supplier development.” For ‘Manage Contracts’ the report states “The Collaborative Performance Framework (CPF) is our primary tool to monitor the effectiveness of service levels and KPIs across contracts, reporting monthly to senior management to provide an in-depth assessment of how well the supplier is meeting requirements and where interventions are necessary. It combines quantitative metrics based on hard data, with qualitative measures provided by behavioural metrics, which have been developed from best practice.”
- 3a Scope and requirements management, 4a Optimise the solution, 5b Undertake statutory engagement and consents and 8a Embed continuous improvement – are all assessed as ‘Above Threshold’ based on the Nichols capability assessment<sup>9</sup> in March 2021. For ‘Scope and requirements management’ the report states “There are similar numbers of project teams who consistently seek to link scope and requirements to strategic fit and benefits compared with project teams that use strategic fit and benefits to challenge the need for scheme scope and requirements.” For ‘Optimise the solution’ the report states “There is a wide range of capability, from projects focused on best value solutions, to examples of teams seeking to align with national and sub-national strategies. In general, project teams focused on optimising the economic case (Benefit Cost Ratio (BCR)) for their project.” For ‘Undertake statutory engagement and consents’ the report states “There is a range of capability, with most projects relying on one of a number of ‘templated’ approaches to securing consents based on key project characteristics supported by both internal and specialist resources. In some cases, the approach to securing consents reflected the specific characteristics and context of the project.”

---

<sup>7</sup> Review of Highways England’s Portfolio and Programme management capability by CITI, October 2017.

<sup>8</sup> P3M3@ Summary by Aspire Europe, December 2021.

<sup>9</sup> Review of Highways England’s capability to plan and deliver its RIS2 enhancement capital programme by Nichols, March 2021



For 'Embed continuous improvement' the report states "There is a clear strategy for improvement, but that there is generally not yet a culture of continuous improvement driven by lessons learned and management information. For example, Highways England has a HE2025 vision and Major Projects has the Delivery Transformation Programme with supporting Blueprint setting out its aspiration and strategy."

- 4a Optimise deliverability – this is assessed as 'Below Threshold' also based on the Nichols capability assessment in 2021 – "achieving the committed Start Of Work (SOW) milestone dominated project team thinking with most project teams being focused on hitting the committed SOW milestone whilst reducing risk and uncertainty as much as possible", comparing with starting delivery when risk and uncertainty had been reduced to a tolerable level.
- 8b Maximise the impact of knowledge and experience – this is assessed as 'Below Threshold' based on inputs from the 2021 Nichols capability assessment – "Project teams consistently identify both positive and negative lessons to be learned. Whilst there is a centrally located repository for recording lessons managed by a central knowledge management team, awareness of the repository was very low and only a few interviewees confident that they knew where the repository was on the intranet or how to use it." We also considered the December 2021 Aspire P3M3 report which did not change the assessment, whilst noting that there are now dedicated resources and positivity in this area.
- 8c Innovate – is assessed as just 'Below Threshold' based on the Routes to Market review<sup>10</sup>. The report identified a lot of good practice; e.g. Innovation Hub, CAP, involvement in industry bodies and the structure of the Smart Motorway Alliance (SMA) contract. The report identifies issues with the level of integration with Major Projects and transitioning successfully trialled innovation ideas into 'business as usual' (BAU).

Later on in this chapter we correlate the assessment output in Table 4 with our analysis of National Highways programme of capability development initiatives.

## 2.4 Activity 3 – assess capability development initiatives/plans

This sub-section contains our assessment of National Highways capability improvement plans, specifically its ability to make improvements to its commercial/procurement and project/programme management capability in respect of its major enhancement projects. Our assessment was based on a significant body of information on National Highways current and proposed future capability improvement initiatives within its C&P and MP directorates, supplemented by interviews with nominated owners of each initiative. We also refer in this sub-section to the capability initiatives as capability 'levers'.

---

<sup>10</sup> Longer-term implications of Highways England's road period 2 delivery Routes to Market review, Elliott Asset Management, March 2021.



### **Context for capability developments plans**

National Highways set out capability development initiatives in its DSBP for RP2 in 2018/2019, and a set of efficiency 'levers' that complement these, that it proposed to deliver in RP2. There has been considerable progress since that point, including the development of these initiatives and also other starting additional initiatives. At the time of our review, the framework set out in the RP2 DBSP has been further developed to reflect progress, including in developing and starting to deploy a major change programme; the 'Major Projects Transformation Programme'.

Additionally, it was evident that National Highways was driving activity focused on enhancing its current capability position and, concurrently, undertaking priority work to support achievement of its RIS2 Efficiency KPI target. National Highways has been clear and transparent about the current status of its capability development plans, and some of the important challenges faced. For example, optimism in relation to the scale and pace of changes proposed, notably the time required to implement changes to capability, culture and behaviours, and processes, custom and practice internally and throughout the supply chain.

In its DSBP for RP3, which is expected to be released in 2023/24, National Highways will identify the capability initiatives that it proposes, in order to enable the organisation to improve its capability and performance and hence be more efficient in RP3. National Highway will define the structure for these initiatives and corresponding framework of efficiency levers in its DSBP. Future plans and the framework for RP3 capability and efficiency are, inevitably, still under development. The purpose of our review is not to pre-judge the DSBP proposals for RP3, as National Highways might identify a different framework of capability/efficiency levers. It is likely, however, that there will be a high degree of alignment between the levers set out in this report and those ultimately identified in the DSBP.

Recognising the evolving nature of the capability plans due to the above factors, the basis of our analysis of capability initiatives is as set out in documents available for review in the period August to November 2022.

### **Capability development initiatives**

We reviewed the capability development initiatives listed in Table 5. It is important to note that the capability development plans are not exclusively for achieving efficiency, they are also to drive wider benefits for improved safety, reduced road user impact and tackling National Highways 'net zero' goals. We use the term capability/efficiency lever when there is a relationship between capability improvement and efficiency opportunity. The capability development plans were at various stages of development and deployment in RP2; ranging from mature activity with robust plans, assured data and approved funding in place; through to other aspects that were at a relatively early stage, with more limited underpinning data and assurance and/or that requires further investment later in RP2.

Capability Initiative	Description	Implications / Outcome
Innovation Re-applied (IR)	Improve capability in delivering innovation, standardisation, systematic and repeatable production; via a suite of new strategies, delivery models, metrics, tools and products (including a standard inventory or 'kits of parts' (skills; carbon reduction strategy	More efficient delivery of low carbon assets; safer, quicker and predictable construction, improved quality and reduced waste
Digital by Default (DbyD)	Build digital capabilities to deliver projects digitally 'end-to-end', unlocking and exploiting data via a digital toolset, common data environment and architecture, new systems, digital product catalogues and information systems across projects and within the supply chain	Shift to digitally enabled design, modular and standardised solutions and greater automation that reduce waste and inefficiency
Budget Led Design (BLD)	Develop the capability, tools and relationships to deliver projects to budget, enhance commercial considerations in scheme design, and tackle the traditional culture for the supply chain to focus design to scope more than to cost	Budget-led development and decision-making through the project life-cycle, with more efficient costs that are closely aligned to budgets
Integrated Project Management Framework (IPMF)	Enhanced portfolio-wide capability via a modified project lifecycle model, new common workflow for capital projects, stronger programmatic approach, culture to challenge the norm, and streamline assurance/governance	Improved consistency in right first time and faster delivery, efficiencies, reduce road user impact, delivery of Net Zero targets and efficient use of internal resources
Delivery Acceleration Programme (DAP)	Boost capability to challenge project delivery timescales and exploit schedule opportunities via deployment of new products/project management activities	Earlier and accelerated project delivery, plus de-risking the delivery of the major project portfolio
Delivering Efficient Projects (DEP)	Targeted challenge activity for RP2 major projects to ensure they get 'back to budget'; a tactical initiative focused on the RIS2 efficiency KPI	Cost savings and efficiencies realised compared to mid-RP2 forecasts
Project Management/project-specific	Continued activity in deploying existing, established capabilities in identifying and delivering 'local' (i.e. project-specific) efficiency opportunities	Delivery of efficiencies that are not otherwise applied across a programme or portfolio as a whole

Capability Initiative	Description	Implications / Outcome
SMP/SMA	Seven-party alliance contract designed to deliver capability in systemised process improvement, design optimisation, standardisation, automation, optimised planning and delivery; all supported by central procurement, optimised funding and risk and incentivisation arrangements	Safe, green, faster and efficient delivery over a 10-year contract, and provide a C&P environment to deliver all relevant capability levers; with development, deployment and resultant efficiencies in RP2, with greater embedment during RP3 <sup>11</sup>
RIP/Regional Delivery Partnerships (RDP)	Commercial framework for a secure pipeline of work contacted across all SRN regions, designed to enhance and incentivise supply chain capability and change behaviours over the long-term	Improve value, reduce waste, optimise resources and deliver efficiencies and provide the C&P environment to deliver other capability levers; including to further deploy and embed the benefits from RDP in the successor 'Integrated Project Framework' from early RP3
CIP	A focal point for development and delivery large, complicated, atypical and risky projects which are also a source of continuous improvement and knowledge management capability via lessons learnt, plus also early work on 'future RIS' schemes	Outcomes as per RDP above, plus effective application of capability improvement initiatives to early stage 'RIS3 pipeline' schemes with greatest opportunity to drive efficiencies in RP3, subject to decisions on the scope/extent of this pipeline
C&P Programme Management – other	Ongoing activity to enhance contract management capability, plus implementation of recently developed category management capability and underpinning plans/products	Support to delivery of SMA and RDP programmes above, plus efficiencies that result from RP3
Quality Management (QM)	Strategy aligned to industry leading-edge thinking, which is currently at an embryonic stage, to improve capability to enable right first time, compliant, error free delivery and hence tackle the cost of poor quality over the medium to long-term	Optimised portfolio-wide and 'whole life' reduction in waste and improved efficiency across all capital works (i.e. including but wider than major projects)

<sup>11</sup> For RP3, this will be fundamentally dependent on the outcome following Government's decision to pause the roll-out of Smart Motorways.



Capability Initiative	Description	Implications / Outcome
Continuous Improvement (CI)	Initiatives to foster an environment where people, processes, systems and associated capabilities are continuously improving; focused on improving people capability and solutions to improve major project delivery	A strong culture of improvement that supports/enables other capability initiatives, together with improved P3M3 maturity
Knowledge Management (KM)	Enhanced end-to-end capability across all programmes via enhanced tools, products, processes and standards to capture and share knowledge, share best practice, tackle repetitive problems and improve decision-making	Improved 'right first time' delivery and efficiencies, plus support in realising the benefits of other capability initiatives

Table 5: Capability development initiatives reviewed

### Span of impact of capability development initiatives

We then mapped each of the capability plans according to their span of application and impact at three levels mirroring how major projects organises its projects into programmes and an overall portfolio:

**Project-level** – initiatives that can be applied at a project level to leverage capability improvement. These are deployed programme-wide; i.e. they are not specific to any major project and are also subject to programme-level controls.

**Programme-level** – initiatives that span across projects within C&P programmes (SMP, RDP and CIP), setting the commercial environment to enable capability improvements at project level.

**Portfolio-level** – common initiatives that lever capability improvement that are applicable common across all the projects in the MP portfolio.

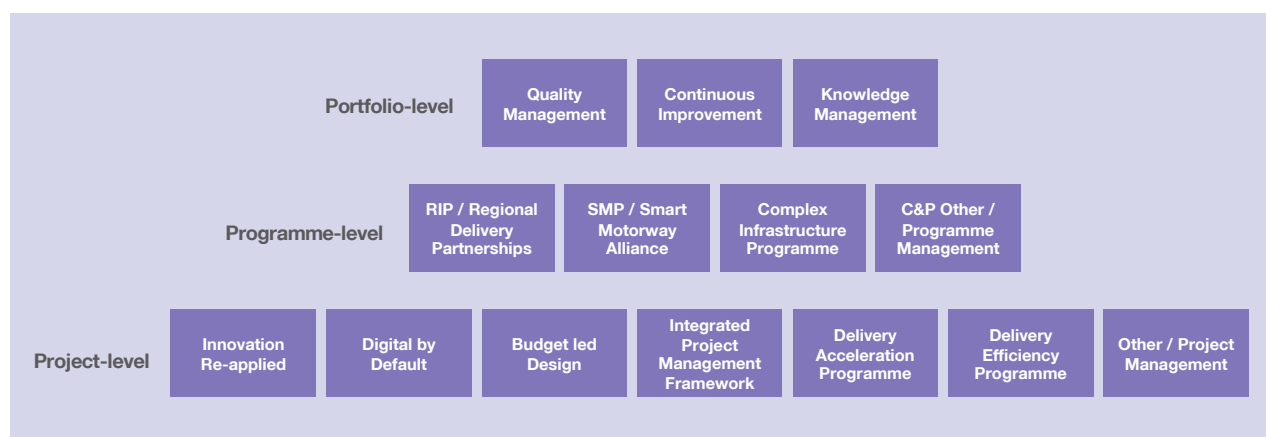


Figure 3: Capability initiatives organised by their span of impact

The Lower Thames Crossing (LTC) project sits outside the structure shown in Figure 3 given its unique size, atypical scope, complexity and bespoke organisational setup. While many of the capability/efficiency initiatives described in this report will apply to LTC, the scale and timing of such application, and the benefits that result, may be different from other projects and programmes, so there are limitations on applying generalised conclusions to this scheme. There is likely to be a case for giving specific consideration to how the findings of this work might apply to LTC.

### Assessing the size of efficiency opportunity and potential timing

We then focussed on assessing at a high level for each capability initiative:

- What is the potential scale (Low/Medium/High) of opportunity to leverage capability improvement when an initiative has been deployed and embedded.
- How mature (Low/Medium/High) are the plans and deployment status to leverage capability improvement; i.e. a measure of the extent to which the capability lever has been progressively developed, deployed, embedded and operating as BAU across the major projects portfolio at the mid-point of RP2. This provides a high-level indicator of when the capability initiative could realise its opportunity.

Table 6 contains the criteria used to assess scale of opportunity and maturity of plans and deployment.

Level	Scale of 'Opportunity'	'Maturity' of development and deployment (at mid-point of RP2)
Low	The lever expected to enable a modest or incremental capability improvement over time, or to help support and enable other levers	The lever is at an early stage of development and deployment, and not yet being used at all, or used consistently by National Highways and its supply chain
Medium	The lever has the potential to enable a mid-range level of capability improvement once it is fully deployed	The lever is developed and is starting to be deployed within National Highways and its supply chain, with some capability improvements starting to be realised
High	The lever has potential to drive a significant or step-change improvement in capability once fully deployed	The lever has been substantially deployed, with increasing levels of embedment and use within National Highways and its supply chain as evidence of growing capability improvement

Table 6: criteria used to assess capability lever opportunity and maturity levels



Tables 7 to 9 below contain our assessment for levers at project, programme and portfolio levels respectively.

We acknowledge this is a high-level assessment which is subject to a number of important caveats, specifically it will depend on:

- The full scope of proposed changes arising from the initiatives being approved and funded in the remainder of RP2 and in RP3.
- The speed of development and implementation of these changes within the business and, through existing and/or new C&P contracts with the supply chain, acknowledging related risks.
- The scale of investment in major projects proposed for RP3 as, for example, a marked reduction compared to RP2 may alter the business case benefits for levers as currently envisaged and could, therefore, result in a revaluation of initiative scope and plans.

We take account of these caveats in the next chapter of this report in relation to developing potential efficiency ranges estimates arising from capability improvements.

Capability Lever	Type	Opportunity	Maturity
Innovation Re-applied (IR)	PPM/C&P	High	Varies: Medium/Low
Digital by Default (DbyD)	PPM/C&P	High	Varies: Low/High
Budget Led Design (BLD)	PPM/C&P	Medium	Varies: Low/High
Integrated Project Management Framework (IPMF)	PPM	Medium	Low
Delivery Acceleration Programme (DAP)	PPM	Medium	Low
Delivering Efficient Projects (DEP)	PPM	Medium	Medium
Project Management/project-specific	PPM	Low	High

Table 7: Summary analysis of project level efficiency levers  
(Type: PPM = Project & Programme Management; C&P = Commercial & Procurement)

Capability Lever	Type	Opportunity	Maturity
SMP/Smart Motorway Alliance (SMA)	C&P	High	Medium
RIP/Regional Delivery Partnerships (RDP)	C&P	High	Medium/Low
CIP	C&P	n/a	n/a
C&P Programme Management – other	C&P	inc.	High

Table 8: Summary analysis of programme level efficiency levers

Capability Lever	Type	Opportunity	Maturity
Quality Management (QM)	PPM/C&P	Varies: Low to High	Low
Continuous Improvement (CI)	PPM	Low	Varies: Medium/Low
Knowledge Management (KM)	PPM	Low	Low

Table 9: Summary analysis of portfolio level efficiency levers

We use the above analysis later in this report to conclude on the potential capability development to the end of RP2 and then for further development in RIS3.

## 2.5 Activity 4 – mapping development initiatives against material capabilities

We undertook a cross-check of our material efficiency capabilities, as defined in activity 1 above, with the scope of National Highways' suite of capability development initiatives. Table 10 below summarises this cross-check.

Material Efficiency Capability	Assessed as below threshold or insufficient information	Capability levers that primarily apply
1a. Manage projects		IR, DbyD, BLD, IPMF, DEP, PM other
1b. Manage programmes	X	IR, DbyD, IPMF, SMP/SMA, RIP/RDP
2a. Manage categories		SMP/SMA, RIP/RDP, C&P Programme other
2b. Manage procurement		SMP/SMA, RIP/RDP, CIP, QM
2c. Manage contracts		IR, DbyD, BLD, SMP/SMA, RIP/RDP, QM

Material Efficiency Capability	Assessed as below threshold or insufficient information	Capability levers that primarily apply
3a. Have clarity of strategic fit, scope, requirements and benefits		IR, DbyD, BLD, IPMF, QM
4a. Optime the solution		IR, DbyD, QM
4b. Optimise deliverability	X	IR, DbyD, DAP
5a. Undertake statutory engagement and secure consents		DAP, IPMF, PM other
6a. Manage construction preparation	X	IR, DbyD, DAP, SMP/SMA, RIP/RDP, CIP
7a. Construction and commissioning	X	IR, SMP/SMP, RIP/RDP, QM
8a. Embed continuous improvement		DAP, CI, KM
8b. Maximise the value and impact of experience and knowledge	X	CIP, QM, CI, KM
<b>8c. Innovate</b>	X	IR, DbyD, DAP

Table 10: Correlation of capability levers against the material efficiency capabilities

This cross-check confirmed that all material efficiency capabilities are being addressed and, specifically, that those that we initially assessed as 'Below Threshold' are subject to ongoing development via a number of capability development initiatives.

## 2.6 Activity 5 – Consult with other similar organisations

The review included a comparator exercise where we sought at a high-level to compare National Highways capability development approach to other similar infrastructure delivery organisations. We presented the structure of capability improvement initiatives and sought feedback on their approach to capability development. Specific relevant findings from this comparison exercise:

- We did not find an equivalent systematic approach to capability development in the other organisations.
- Other organisations have lists of standard efficiency levers that are used for consistency of reporting of efficiencies claimed.
- Other organisations have some similar capability/efficiency levers for their current control period to National Highways, for example, use of off-site construction.



- Other organisations appear to have smaller number of capability/efficiency levers identified.

At a strategic level it highlighted a subtle difference in approach and emphasis between:

- A forward-facing approach evident in National Highways initiatives and plans to their capability development; i.e. achieving efficiency improvements (along with other benefits) requires proactive capability development.
- Other organisations where it appears there is a greater emphasis on standard efficiency levers being used to report on how efficiencies have been achieved against a top-down efficiency target.

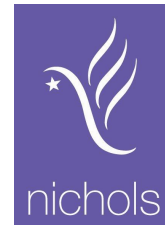
## 2.7 Conclusions

This sub-section contains our conclusions (and associated findings) arising from the various elements of capability analysis described above in sub-sections 2.2 to 2.6. We have structured our conclusions using the following questions:

1. Do National Highways have a comprehensive approach to improve their capability to deliver capital enhancements and to leverage cost efficiencies?
2. How does National Highways approach to capability development compare with others?
3. How robust and mature are the underlying plans for or deployment of capability improvement?
4. When will the capability improvement initiatives be developed, deployed and fully embedded in the time horizon of the remainder of RP2, throughout RP3 and beyond RP3?
5. What are the main risks and/or barriers to capability improvement?

### **Question 1: Do National Highways have a clear approach to improve their capability to leverage efficiencies in their capital enhancement portfolio?**

We conclude that National Highways has a clear, systematic approach to capability improvement through its transformation programme of capability development initiatives. The outcomes intended from its programme of capability improvement are broader than driving cost efficiency, they also include improved safety, reduced road user impact and tackling National Highways 'net zero' goals. As a consequence, the linkage between capability improvement initiatives and leveraging efficiency was not as clear. Our cross-check between the programme of capability initiatives and the 'material' efficiency capabilities (from our value chain analysis) provided a level of re-assurance that the capabilities assessed currently as 'below the threshold' are planned to be developed.



National Highways (at the time of the review) were undertaking priority work to boost its capability and to achieve its efficiency KPI target for RP2 (for example through its Delivering Efficient Projects ‘DEP’ initiative), while simultaneously also developing and deploying a comprehensive transformation programme comprising activities or ‘levers’ that are intended to enhance its capability, starting their deployment in RP2, but more realistically realising benefits in RP3 and over the long term. Examples (by no means exhaustive) include:

- Success in the deployment of capabilities in Innovation Re-applied (where the SMA is its trailblazer) and Digital by Default (integral to National Highways’ Digital Roads Strategy).
- Proven SMP capability within C&P and project/programme management since the SMA was established in early RP2 via standardised, repeatable, asset-led approach that presents wider opportunities for application across the business, notwithstanding the current pause to further smart motorway projects.
- Evidence of learning being via continuous improvement and knowledge management levers, with CIP’s A14 Cambridge to Huntingdon scheme a particularly rich source of learning for other capability levers.
- Formative plans for a step-change in quality management capability in RP3 and over the long-term, via a whole life capital portfolio wide approach to this, and linking this into relevant C&P and project management capabilities.

#### **Question 2: How does National Highways approach to capability development compare to others?**

We conclude that National Highways approach to capability development compares well to the other organisations consulted, in terms of having a systematic forward-facing approach. We also found that across the capability levers assessed that National Highways has either taken account of, or is at the forefront of infrastructure leadership in capability development. Examples include:

- **Adoption of Project 13<sup>12</sup>** – notably through the SMP and RDP, National Highways is engaging with its supply chain in value creation; through the use of collaborative, integrated teams; using commercial models that drive innovation and activity that enables both efficiencies and supplier reward for success and; deeper engagement with Tier 2-3 sub-suppliers in that innovation effort.

---

<sup>12</sup> Project 13 Home – Project 13.



- **Approaches aligned to Government's Construction Playbook<sup>13</sup>** – the themes and policies of the Construction Playbook include 'harmonising, digitising and rationalising demand' and 'embedding digital technologies across contracting authorities to accelerate the use of platform-based technologies and standardised components and data throughout the construction delivery lifecycle'. National Highways' Digital by Default programme embraces these themes by seeking to develop its capabilities, and those of its supply chain, by shifting towards modular and standardised approaches as well as greater automation in construction delivery.
- **Engagement with the Get it Right Initiative (GIRI)<sup>14</sup>** – National Highways is a prominent member of the GIRI group of UK construction industry experts and organisations pursuing improving productivity, quality, sustainability and safety by eliminating error. National Highways is particularly focussed on quality as a capability lever to underpin its three imperatives of 'safety, customer and quality'.
- **Engagement with the Transport Infrastructure Efficiency Strategy (TIES)<sup>15</sup>** – National Highways has been engaged in the initial work with High Speed 2 Ltd, Transport for London, Network Rail, Crossrail and DfT. National Highways has exchanged good practice with Network Rail. For example: development of the IPMF initiative and learning from Network Rail's new Project Acceleration in a Controlled Environment (PACE) lifecycle model and; similarly, the DAP initiative's alignment to Network Rail's 'Project Speed' initiative.

### **Question 3: How robust and mature are the underlying plans for development and deployment of capability improvement?**

We conclude that the capability development plans are at various stages of development, deployment and embedment in RP2. Ranging from (in some cases) mature activity with robust plans, assured data and approved funding in place; through to other aspects that were at a relatively early stage, with more limited underpinning data and assurance and/or that requires further investment later in RP2.

### **Question 4: When will the capability improvements be realised in the time horizon of the remainder of RP2 and throughout RP3?**

We conclude that the majority of the improvements that result from the capability development programme lies ahead, rather than in the short period to the end of RP2. Capability improvement is therefore on a steady trajectory for improvement, throughout RP3 and (for some levers) continuing over the longer-term before the requisite capabilities are fully embedded and part of BAU.

<sup>13</sup> The Construction Playbook – GOV.UK ([www.gov.uk](http://www.gov.uk)).

<sup>14</sup> Home | Get It Right Initiative.

<sup>15</sup> Transport infrastructure efficiency strategy – GOV.UK ([www.gov.uk](http://www.gov.uk)).



Our assessment of each capability lever, tested via consultation with National Highways subject matter experts, indicates a range of current (mid-RP2) levels of progress and maturity. This variable level of lever maturity include, for example:

**Low** – the IPMF is in development and not yet rolled-out across the business; quality management (which may derive a significant benefit) is a long-term process of capability change to traditional industry behaviours and a broader capital portfolio management consideration.

**Medium** – RIP/RDP has started to deploy Innovation Re-applied and Digital by Default, but initial results have been mixed, including as a result of the difficulty of applying these capabilities to in-flight projects, C&P frameworks and individual contracts, and effecting capability change internally and within the supply chain.

**High** – the SMP/SMA has been the initial ‘trailblazer’ for Innovation Re-applied, notwithstanding the challenge caused by the pause to further roll-out of smart motorways.

**Variable** – DbyD capability is currently inconsistent, with ‘sub-lever’ scope elements at different levels of embedment; BLD’s cost estimation data tools and processes are mature but recently initiated changes to supply-chain behaviours and capability are not mature.

It is important to note that ‘low’ maturity does not represent a problem or weakness. This is invariably because the lever has only recently been launched and developed, or because of the time required to deploy and successfully embed it within the business, within projects and contracts and within the supply chain.

This is consistent with the results of National Highways Portfolio, Programme, and Project Management Maturity Model (P3M3) assessments. This model comprises a five-level scale where National Highways current goal is to improve its capabilities to achieve ‘level 4’. P3M3 assessments undertaken by National Highways in 2018 and 2021 show progress over the three year period in moving from level 3 to level 4 for its project management capability, and moving from level 2 to level 3 for its programme management capability. This is evidence that capability improvements take time to achieve.

It is also evident that National Highways project management capability continues to be more mature than its programme management capability. In this regard, there is evidence of ongoing work to improve programme management capability, notably success via the SMP/SMA. National Highways has also identified learning from the RDP that its C&P directorate plans to apply into the successor contract in 2024.



We found evidence that deployment and embedment of capability improvements is forecast to extend beyond RP3. This reflects the prevailing maturity level of capability levers as well as the supply chain dependency noted above. It also reflects that some levers will require more strategic approach to be adopted. In particular, National Highways is actively considering a capital portfolio-level approach to quality management capability, in line with industry (GIRI) leading edge thinking. This is because tackling the cost of poor quality is a ‘whole asset life’ consideration involving and integrating the specification and delivery of maintenance, renewals and major projects. Enhancing the capability of the business, and driving efficiencies that result, is likely to take a number of road periods.

**Question 5: What are the main risks and/or barriers to embedding capability improvement?**

The most frequent observation across capability levers, was that there is a significant dependency on National Highways’ supply chain capability to realise benefits. Effecting change within the supply chain constrains the pace and extent of capability development and resultant efficiency gains given that levers require changes to traditional processes, custom and practice (in design development and construction), and to the culture, behaviours and to C&P’s commercial models. This dependency also has implications for National Highways’ own capability to manage and deliver the changes required within the supply chain.

For balance, examples of good practice within the supply chain were raised, as evidence that change is being made, for example with encouraging examples of the benefit of giving SMEs and Tier 2 and 3 suppliers a greater voice and direct opportunities to contribute to influence solutions and decision-making.

Another notable risk to embedding of capability improvement would be a lesser commitment to funding the development and the deployment of the capability development initiatives in the latter stages or RP2 and in RP3. This would reduce the potential for efficiency savings from the capability levers.

Finally, there may be risks to delivery of capability (and resultant efficiencies) that result from the unplanned and/or disruptive impact of schedule risks and slippages, as discussed in section 2.3. It will therefore be important that National Highways continues to develop its schedule risk management capability (part of its overall manage projects capability) as recommended by Nichols in a previous review<sup>16</sup>. In this regard, we understand it is proposing to embed improvements to this capability in RP2, and that its IPMF and DAP capability levers are focused on this aim, and the BLD and DEP capability levers are focused on tackling the cost consequences to major project budgets.

---

<sup>16</sup> Preparing for RIS3 Enhancements: Delivery Timescales & Risk Review, February 2022.



## 2.8 Summary

This section summarises National Highways journey to mature its, and its supply chain's, capability to deliver its capital enhancements projects and programmes. It looks back at what capabilities have been already successfully developed as strengths. It also look forward to its plans for future capability development to address business needs, corresponding areas of focus, and areas of relative weakness and opportunities for improvement. In both cases, this is with respect to project and programme management, and commercial and procurement management.

### Capability maturity

Capability typically matures through a number of stages:

- Identification of areas for improvement and making the case for investment in these.
- Design and development of capability improvement initiatives, for example in processes, tools, standards, training, etc.
- Deployment, adoption and embedment of initiatives by National Highways across its organisation.
- Deployment, adoption and embedment of initiatives by National Highways' supply chain.
- Maintenance and continuous improvement.

Building capability maturity requires consistent and continuous management attention, as capability can only be considered as being mature after it has been successfully adopted and embedded across the major projects organisation. This requirement for concerted management focus to achieve capability maturity means there is an implicit need to prioritise capability development which, together with the scale of change required, significantly influences how much can realistically be achieved over time. Capability maturity will inevitably, therefore, span several road periods.

### Where is National Highways on its journey?

National Highways was established in 2015 and is now approaching the end of the third year in its second five year road period. Compared with other infrastructure organisations, for example Network Rail, that is approaching the end of its sixth five year control period, National Highways has had less time to mature its capability to deliver its capital enhancement programmes, which is reflected in the lifecycle and status of the various initiatives it is investing in to improve its capability.



## Strengths

National Highways, since roads reform, embarked upon a number of major change initiatives during RP1, in order to tackle the significantly increased capital investment plan committed within RIS1 as well as challenging efficiency targets. These initiatives focused on enhancing its ability to deliver major projects, investing in the competences of its staff, creating communities of practice led by 'Heads of Profession' and starting to reshape its commercial and procurement models.

National Highways has continued its focus on capability maturity in RP2, notably on maturing its project management and project controls capabilities, with embedment of the Integrated Project Controls (IPC) initiative and, more recently, with its proposed Integrated Project Management Framework (IPMF) initiative that will enhance its long-standing PCF process for major projects, and also incorporate the successfully piloted DAP initiative that will enable earlier and accelerated project delivery. There is clear evidence that National Highways has developed its project management capability into a strength (highlighted by its recent P3M3 assessment), although with some exceptions where further development has been identified as needed, for example in schedule risk management<sup>17</sup>.

Similarly, the investment made by National Highways in its commercial and procurement management capability in RP1 means they now have established more mature contracting models in the SMA and RDP. The SMA has established a strong programmatic, integrated approach and organisation that has encouraged investment, innovation and capability improvement as well as optimised and standardised production and construction solutions. RDP has established a pipeline of work for integrated, collaborative delivery teams, streamlined procurement process, plus strong incentives for commercial performance and efficiency that National Highways is planning to further embed internally and within its supply chain in its successor framework in RP3. National Highways is also currently deploying category management capability within its supply chain, in line with industry good practice. Its mature cost estimating and cost intelligence capability is being further enhanced via new systems, models and budgeting controls. Its overall capability improvement is evidenced by its recent CIPS 'platinum' award.

## Opportunities, challenges and weaknesses

Compared to its focus on project management, National Highways has acknowledged a need to improve its programme management capability maturity<sup>18</sup>; i.e. its systems, processes and tools that enable common objectives to be achieved consistently across a number of separate projects. The SMP is leading the way with its common re-usable tools, practices and processes deployed via the SMA across all current smart motorway projects. For the RDP, the identified weakness in Knowledge Management<sup>19</sup> is evidenced by a lag in its maturity in programme management when compared to project management, and specifically

<sup>17</sup> Preparing for RIS3 enhancements – delivery timescales and risks review, Nichols, February 2022.

<sup>18</sup> National Highways P3M3@ Summary, Aspire Europe, December 2021.

<sup>19</sup> Review of Highways England's capability to plan and deliver its RIS2 enhancement capital programme, Nichols, March 2021.



sharing of re-usable artefacts across projects, and is one of the needs identified in the scope of National Highways' initiative to improve its Continuous Improvement and Knowledge Management capabilities in RP2 and RP3.

National Highways has identified two key opportunities for further capability development. The first of these is its Innovation Re-applied initiative, targeting capability to improve productivity via a systematic and repeatable production approach to major projects development and delivery. The second is its Digital by Default initiative to deploy new digital capabilities to improve the development and delivery of major projects through their lifecycle. Investment in these initiatives has been secured by National Highways, with these starting to be deployed in RP2 although, as described above, this capability will take time to deploy, adopt and embed across the major projects portfolio, most notably in newly committed projects where the greater opportunity exists compared to previously committed projects that are in-flight already in RP2.

Looking ahead, towards RP3, National Highways is planning the next stage of focus for maturing its capability in project/programme management and commercial and procurement management, notably via its Major Project Delivery Transformation (MPDT) programme, a framework which encompasses the various capability initiatives noted above. In this regard National Highways will be increasingly dependent on the successful adoption and embedment of capability improvements within its supply chain; i.e. driving changes beyond its organisation and the direct control/influence of its client project management capability. This capability maturity opportunity will also be dependent on government commitment to and continuity of a major investment programme of major projects in RP3.

National Highways is also considering plans to enhance its portfolio management capability notably via consideration of its Quality Management capability, aligned to emerging industry thinking and good practice. This will require a different, whole-life approach that spans across its entire capital investment portfolio, with capability maturity spanning several road periods.



## 3. Scope for efficiencies

### 3.1 Introduction

The scope of Phase 3 in our remit was to determine the scope for potential efficiencies that could be reasonably expected from improvements in National Highways' commercial/procurement and project/programme management capability. Accordingly, our analysis of capability improvements described in the previous chapter has provided an important input to this section.

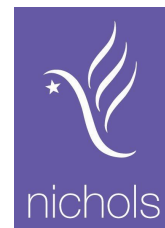
The following important contextual points were considered with regards to what “determine the scope of efficiencies” meant:

- The current RIS2 programme has been subject to changes due to factors outside National Highways control, such as the Government's decision to pause the roll-out of Smart Motorways that has impacted the SMP and, more recently, the inflation challenge and resultant cost pressures affecting all capital programmes that has to be absorbed within funding, and the Government's recent Autumn Statement<sup>20</sup>. The uncertainty caused by such developments makes it more challenging for National Highways to plan its future delivery.
- Significant delays to DCO decisions and statutory planning consents, and judicial reviews of DCO decisions, have been experienced, reflecting heightened challenges that have impacted delivery schedules for a large number of major projects in National Highways RIP and CIP programmes, as detailed in our recent review for ORR of delivery schedules and risks for National Highways major projects<sup>21</sup>.
- 'Change control' agreed with the Department for Transport to formally reduce the RP2 efficiency target as a result of the above.

---

<sup>20</sup> Autumn Statement 2022, 17 November 2022.

<sup>21</sup> Preparing for RIS Enhancements: Delivery timescales and risks review by Nichols, February 2022.



- At this stage in the RIS setting process, it is unclear what projects National Highways will be required to deliver during RP3. The type of projects included in the portfolio and the balance of 'new' projects versus the completion of existing, committed projects will have important implications for efficiency.

Consequently, our scope was clarified as being to develop a proposed method of assessment that could be used to forecast the scope for efficiencies that could be reasonably expected from improvements in National Highways' commercial/procurement and project/programme management capability, as applied to its major enhancement projects portfolio. A definitive view forecast of future efficiencies was not required, but instead to provide National Highways and ORR with the evidence to discharge their duties to the RIS3 process and, to avoid spurious accuracy, provide ranged estimates of National Highways efficiency potential.

Accordingly our method for assessing the 'scope of efficiencies' comprised three related elements:

**Bottom-up assessment** – developing a bottom-up efficiency range forecast model for the various capability levers assessed, as described in chapter 2.

**Top-down assessment** – undertaking a check of the bottom-up assessment by considering the size of efficiency delivered and proposed in RP1 and RP2.

**Comparator assessment** – integrating the above assessments with the results of feedback from a comparator exercise with other infrastructure organisations in relation to their capability and efficiency targets.

Our conclusions on the potential scope for efficiencies comprises a triangulation of these three assessments, and are described below.

### 3.2 Bottom-up efficiency range estimate

To address the above context, we recognised that we needed to set out a method to assess efficiency for RP3 that could be applied without knowing (or needing to know) at this point in time what the RP3 major project portfolio will comprise. Our method also needs sufficient analytical rigour that National Highways can build on this work in its RIS3 planning, and also that ORR can use alongside other evidence to baseline those plans when presented in the DSBP for RP3, and so overcome the limitations associated with high-level assessments.

Our efficiency calculation methodology is based on the following principles:

- It is linked directly to the results of phase 2, providing a 'line of sight' between National Highways capability levers at their current levels of maturity, and the potential efficiencies that result.



- It is based on a model that can be applied to each and every major project in RP3 when the baseline portfolio is determined in 2024/25, where this is explicitly linked to the efficiency opportunity at any given stage in its lifecycle, that can therefore address the balance of efficiency for ‘new’ projects versus committed projects that are already in flight.
- It includes a process-step to factor down efficiency estimates to allow for uncertainties, dependencies and maturity, and hence the time required to develop the pre-requisite capability needed to drive future efficiencies.
- It is based on efficiencies compared to a robust pre-efficient project cost baseline. This is an important point, as it means that the range forecast is purely for efficiency, and is not adjusted for or conflated with the effect of funding levels<sup>22</sup> or risks or headwinds, such as those noted in the introduction above, which National Highways will also need to address in its DSBP for RP3 alongside its efficiency plans.
- It provides an estimated efficiency range for RP3, so does not double-count RP2 efficiency or seek to assess National Highways very latest progress in delivering its efficiency KPI for RP2, which is not within the scope of this review.
- It includes efficiency ‘overlays’ applied at programme and portfolio levels, specifically to avoid the risk of double-counting efficiency benefits at more than one level.

### Developing efficiency range forecasts

Our efficiency range forecasts are based on National Highways documentation. In this regard, it is important to note that this documentation contains a broad range of data at varying levels of maturity, detail and approval. Data is included in, for example, business cases, investment papers, lever plans, progress reports and published external papers. While we have used this data and consulted National Highways on how we have derived the efficient ranges, it does not represent an assured and approved output by National Highways.

We have defined three related ranges of efficiency:

**Theoretical efficiency** – the estimated maximum range of efficiency that could be expected over the long-term (i.e. well beyond RP3) for a capability/efficiency lever when it is fully mature; i.e. developed, deployed, embedded and operating as business as usual, with all requisite internal and supply chain changes and capabilities fully in place.

---

<sup>22</sup> National Highways funding for major projects in RP3 may be set at a defined ‘P-value’. For example, if set at P70 funding there is 70% confidence that the major projects portfolio can be delivered without requiring additional funding.



**Practical efficiency** – the estimated range of efficiency for a new project that could be expected in RP3 for a capability/efficiency lever, given current and projected level of maturity and associated capability development activity; i.e. reflecting timescales required to effect changes, plus challenges and dependencies that constrain achievement of efficiency. This is a range derived by factoring down the theoretical efficiency.

**Applicable efficiency** – the estimated range of efficiency for a specific capital enhancement project that could be expected in RP3 given its lifecycle maturity at the point at which the capability/efficiency lever could be ‘pulled’; for example, if a project has started construction when the lever is capable of being applied, then it cannot realise the efficiencies derived during options and development phases.

We use the ‘practical efficiency’ range to determine the maximum level of efficiency that could potentially be assumed for a new enhancement project in RP3. We use the ‘applicable efficiency’ range forecast to address the reducing opportunity to achieve efficiency depending on what lifecycle stage a project is at when the pre-efficient forecast is determined. This is consistent with a National Highways representation of this diminishing opportunity<sup>23</sup>.

### **Step 1 – theoretical efficiency ranges**

The theoretical longer-term efficiency range estimate for each lever was developed based on the phase 2 capability assessment and National Highways documents, data and interviews. The numeric ranges are consistent with the Low, Medium, High capability opportunity levels set out in Tables 7 to 9.

### **Step 2 – practical efficiency ranges**

The practical efficiency ranges are derived by factoring down the theoretical efficiency ranges for each lever, to take account of key constraints and potential risks and dependencies.

Tables 12, 13 and 14 summarise the factored efficiency ranges for project, programme and portfolio level respectively and associated rationale for the factoring applied. The most common causes of factoring are set out in Table 11.

---

<sup>23</sup> Inflation and Efficiency Monitoring Manual (EIMM), July 2020.

No.	Rationale for factoring – common causes
1	Constraint associated with the impact of current maturity of programme or lever, affecting the time required to develop, deploy and embed capabilities, manage related risks, and realise benefits over medium and long-term
2	Mitigate identified overlap and/or double-counting of benefits; notably between related project-level levers, and between interdependent project and programme level levers
3	Risk due to dependency on the development and embedment of requisite internal change and capability improvement
4	Risk due to dependency on development and embedment of requisite supply chain change and capability improvement, including process, practice and behavioural change and resultant risks
5	Risk and dependency on and time required for establishment of lever within relevant C&P programmes and contractual models and frameworks
6	Impact of portfolio and enterprise level factors, including interaction with OMR, that are outside the scope of the review
7	Uncertainty, risk and Optimism Bias

Table 11: Common causes of factoring down

Project-level lever	Factored Practical efficiency range	Applicable common causes (Table 9)
Innovation Re-applied (IR)	2.5 to 4.0%	1, 2, 3, 4, 5
Digital by Default (DbyD)	1.5 to 2.5%	1, 2, 3, 4, 5
Budget Led Design (BLD)	1 to 1.5%	1, 2, 3, 4
Integrated Project Management Framework (IPMF)	0.5 to 1.5%	1, 3, 4, 7
Delivery Acceleration Programme (DAP)	0.5 to 1.0%	2, 3, 7
Delivery Efficiency Programme (DEP)	0	2
Project Management/Other	0-1%	2, 7
<b>Aggregate</b>	<b>6 to 11%</b>	-

Table 12: Project level practical efficiency ranges across the whole lifecycle

Programme-level lever	Factored Practical efficiency range	Applicable common causes (Table 9)
Smart Motorway Programme (SMP)/Smart Motorway Alliance (SMA)	1 to 2%	2, 3, 4, 5
Regional Investment Programme (RIP)/Regional Delivery Partnerships (RDP)		1, 2, 3, 4, 5
Complex Infrastructure Programme (CIP)	n/a	n/a
C&P Programme Management	n/a	2, 7
<b>Aggregate</b>	<b>1 to 2% overlay</b>	-

Table 13: Programme level practical efficiencies across the whole lifecycle

## Notes to Table 13:

- Reflecting discussions with National Highways subject matter experts, we have assumed that the benefits of the capability improvements from RDP, SMA and CIP are to enable and to provide a commercial, contractual and organisational environment to deliver efficiencies at project level. To avoid double-counting benefits that results, we have not identified ranges at programme level for specific capability levers.
- We have not assessed CIP capability as a specific lever as it is an organisational construct not a type of programme or C&P model as per SMP/SMA and RIP/RDP. It comprises only two (albeit large) schemes in RP2, one of which is contracted via the RDP commercial model and the other is an atypical tunnelling scheme which, like LTC, would requires a bespoke approach.

Portfolio-level lever	Factored Practical efficiency range	Applicable common causes (Table 9)
Quality Management (QM)	2 to 3%	1, 2, 3, 6, 7
Continuous Improvement (CI)		1, 2, 3, 7
Knowledge Management (KM)		1, 2, 3, 7
<b>Aggregate</b>	<b>2 to 3% overlay</b>	-

Table 14: Portfolio level practical efficiencies across the whole lifecycle



While each lever is affected in different ways by common factoring causes in Table 11, the three causes that are most prevalent and that have most impact are:

- Lever maturity (factor No. 1) which means that it will take time to realise efficiency benefits, reflecting that many levers are at early stages and will lead to efficiencies over time, potentially multiple road periods.
- Overlap (factor No. 2) as a number of levers are complementary and as benefits projected are (in some cases) duplicative; most notably between project-level and programme-level levers and C&P programmes.
- Supply chain dependency (factor No. 4) reflecting that the lever is seeking to make changes, some transformational, across all of its Tier 1, 2 and 3 supply chain and its design community, with notable challenge and risks (some already evident) affecting the scale and pace at which this is achieved.

### **Step 3 – applicable efficiency ranges**

This step in our methodology is used to address that there is diminishing efficiency opportunity available, depending on what phase of its lifecycle it is at when the capability/efficiency lever is pulled; i.e. the size of the applicable efficiency percentage reduces through the project life-cycle, and is expressed as a percentage of the maximum practical efficiency.

We determined the applicable efficiency percentages by considering, for each of the capability/efficiency lever, at what PCF stage the capability is applied in order to realise its opportunity, and the PCF stage that the efficiency benefit is realised. From this we derived the following applicable percentages to apply to the maximum practical efficiency range:

- 100% – available at project inception (i.e. a potential new ‘future RIS’ scheme in the pre-Options phase).
- 65 to 70% – remaining available after the project has completed its Options phase.
- 15 to 20% – remaining available after the project has completed its Development phase
- 0% – remaining at the end of the construction phase.

These are indicative estimated value ranges, as the opportunity available will vary, potentially significantly, per individual project and C&P programme.

This concept of diminishing opportunity over the lifecycle of a project is consistent with National Highways own analysis. Our analysis of the capability levers that National Highways is now starting to deploy provides greater efficiency opportunity during the development phase, reflecting their focus on transforming design development capability, and changing supply chain capability (and C&P models) from the start of development.

Table 15 summarises the results of step 3, in all cases setting out total efficiencies for a project, not year-on-year values.

Level	Practical efficiency range (at start of project lifecycle)	Applicable efficiency range			
		During Options	After Options	After Development	After Construction
<b>Project</b>	6 to 11	6 to 11	4 to 7	1	0
Programme	1 to 2	1 to 2	1	<1	0
Portfolio	2 to 3	2 to 3	1 to 2	<1	0
<b>Total</b>	<b>9 to 16</b>	<b>9 to 16</b>	<b>6 to 11</b>	<b>1 to 3</b>	<b>0</b>

Table 15: Summary of total efficiencies (rounded to nearest %)

#### Notes to Table 15:

- The variation in the efficiency ranges is reflective of the inherent risk and/or uncertainty in data and in projecting forecasts over the long-term; i.e. it is and will continue to be important to consider this uncertainty in setting efficiency targets for RP3.
- Efficiencies are mutually delivered by major projects and by the relevant C&P programmes. Our programme-level efficiency range has been factored down specifically to account for the overlap and/or duplication of these with the various project-level efficiencies that the relevant C&P levers also help to deliver; i.e. it is not important or relevant whether the project claims the efficiency, or the programme and/or contract claims the efficiency, provided it is not counted twice.
- We assess that relatively little of the practical efficiency range for the capability levers we have examined is available in the remaining two years of RP2. This reflects the generally low level of maturity of the capability/efficiency levers, many of which are now starting to be deployed. It is, however, important to note that this generalisation is not representative of all capability levers, for example:

- Innovation Re-applied and (in part) Digital by Default levers are being successfully deployed on the SMP/SMA, although impacted by the Government's decision to pause roll-out of Smart Motorways.
  - The RDP framework for RIP schemes has recently started to drive changes to supply chain capability, as a step towards a longer-term process for this.
  - DAP has already started to have a positive impact on the development and delivery for pilot schemes.
- As stated previously, there is no assessment of the effect of funding level, or external risks or headwinds within this data.

#### Step 4 – how to apply the determined efficiency ranges

The overall level of efficiency potentially available for RP3 will be highly dependent on the composition and lifecycle status of the portfolio of projects set out in RIS3. This is illustrated in Figure 4, and is consistent with National Highways EIMM.

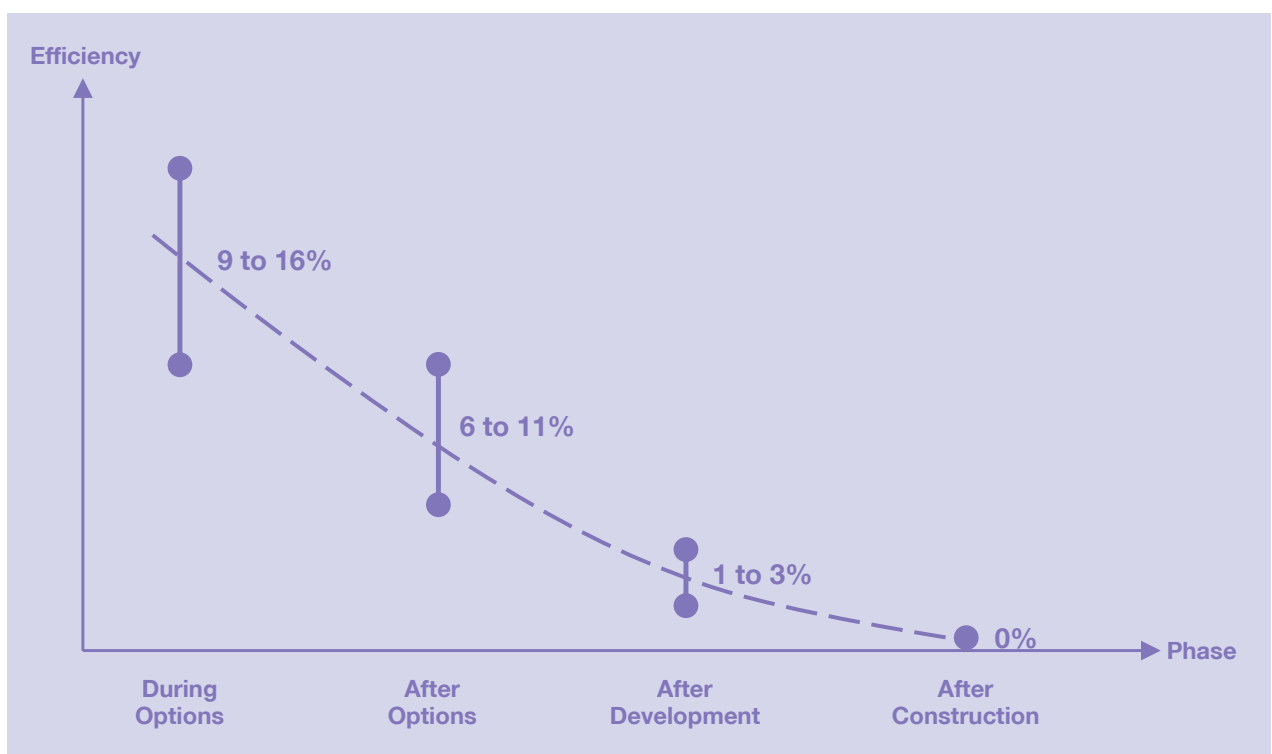


Figure 4: Summary of applicable efficiency ranges over the project lifecycle

The significant difference in efficiency ranges, depending on the lifecycle phase of a project, gives rise to a key challenge in applying this analysis to determine the scope for efficiencies that could be reasonably expected in RP3. In an extreme situation where no new major projects were committed in RIS3, then the upper range of applicable efficiency would not be relevant, leading to a much lower level of efficiency opportunity across the portfolio comprising existing committed schemes, that are in development and construction now, and that will either be in construction or will have been completed by the start of RP3.

While we note that there are no confirmed details for setting the RP3 portfolio at the time of the review, we have created a hypothetical scenario to illustrate how the efficiency ranges could be applied in its RP3 planning process and the resultant effect on the overall efficiency range of having a mix of current RP2 schemes and new RP3 schemes. This scenario comprises:

- The existing ‘Committed schemes’ in MP portfolio (in options, development and construction phases), with applicable efficiency reflective of current and projected lifecycle phase timescales in RP2 and RP3 taken from National Highways reported data.
- A hypothetical portfolio of £3bn of ‘New schemes’ committed for RP3 via RIS3 and therefore commencing in the Options phase. The £3bn is a notional number and does not indicate any expectations or assumptions about what RIS3 will contain, consequently the funding allocated to new schemes could be higher or lower than this.
- A weighted aggregate of these two elements.

The results of the hypothetical scenario are set out in Table 16.

Portfolio	AFC (£bn)	Applicable efficiency
Committed schemes	20	1 to 8
New schemes	3	9 to 16
<b>Overall range</b>	-	<b>2 to 9</b>

Table 16: Illustrative portfolio range scenario

Notes to Table 16:

- Committed scheme cost and schedule data (and applicable efficiency range estimate that results) taken from National Highways' most recent (2Q21/22) quarterly report.



- Committed schemes weighted by cost at project-level for 56 current (not previously OFT projects) reflective of lifecycle phase and applicable efficiency curve, and also excluding 11 paused SMP schemes.
- New scheme scenario attracting the 'applicable efficiency' range in Options phase.

This demonstrates that the smaller the quantum of new schemes brought forward into the RP3 portfolio, the smaller the efficiency range will be as, regardless of the potential benefits of the capability levers. Vice-versa, a larger commitment to new schemes in RP3 would enable greater efficiency benefits to be derived from National Highways capability levers. It will therefore be important for RP3 efficiency proposals to clarify and differentiate between committed and new schemes, and to clarify how efficiencies for committed schemes will be claimed and 'banked' against either the RP2 or RP3 efficiency target.

### 3.3 Top-down efficiency estimate

The preceding section sets out our assessment of the practical efficiency per project available in RP3, estimated at between 9 to 16%, and the lower level of applicable efficiency that may result depending on the project lifecycle and RP3 portfolio brought forward. Given the prevailing uncertainty on the latter, and to provide a cross-check for the bottom-up analysis, we have also considered a top-down assessment of efficiency potential for RP3.

#### Road Period 1 (RP1), 2015 to 2020

In RP1, running from 2015 to 2020, National Highways was set a capital efficiency target of 8%, with a major projects efficiency target of 7.4% efficiency. National Highways outperformed its RP target, delivering an outturn capital efficiency of 11.9%, with 8.8% efficiency for major projects.

#### RP2, 2020 to 2025

In its DSBP for RP2, National Highways proposed a capital efficiency of 8.1% overall, with a major projects contribution of 8.5% (although the RIS2 KPI target is an overall requirement that makes no specific commitment to capital enhancements). In the National Highways' RP2 year 2 efficiency report, this major projects contribution has not changed. National Highways internal documents (DEP – Delivering Efficient Projects) provided during our review, which were work in progress and hence not assured data, indicated a major projects target of 8 to over 9% (with the range depending on the treatment of targets for its 'other enhancements').



## Summary

The data above for RP1 and RP2 indicates a broadly steady and constant trajectory of efficiency since the start of RP1 in the range of 8-9% per RP. This may represent a trade-off between two opposing factors, namely:

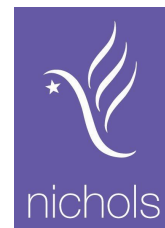
- A steady reduction in efficiency potential over time as 'quick wins', more obvious opportunities are identified and secured, and a gradual shift towards the subsequent progressively more challenging projects and harder won efficiency gains, all have an effect.
- Growing organisational maturity, trending to more developed processes, programme and portfolio management capability, growing C&P capability, continuous improvement and developing and driving capability levers that, as we have identified, help to enable greater efficiency over time.

We consider that it is reasonable that this overall level trajectory of 8-9% efficiency will continue throughout RP3 given the significant programme of capability/efficiency 'levers' now being developed and deployed, that will be progressively embedded in RP3 and, given their current maturity and time required to become BAU internally and in the supply chain, will continue to drive further efficiency opportunities in RP4.

This level trajectory of efficiency assumes a comparable composition and maturity of the major projects portfolio and that there will be a stable investment environment for major projects in RP3, both in terms of the scale of funding in major projects and in terms of the investment in implementing prerequisite capability levers.

### 3.4 Comparator feedback

As part of the comparator exercise we sought at a high-level to obtain feedback on how other similar organisations approach forecasting their efficiency targets and also any quantified data on efficiency targets they were prepared to share. We approached organisations who are responsible for setting or managing delivery of efficiencies for capital projects. We also provide a briefing pack to provide context for a number of specific questions. We took this approach to reduce the inherent risks of benchmarking by comparing different organisations that are operating within different contexts where there are with limitations to making direct comparisons.



The following are the relevant findings from two comparable infrastructure organisations that were able to respond to our request in the time available.

**National Highways' mature C&P-led cost management capability and its database of outturn costs for previously delivered major projects, enables it to set pre-efficient cost baselines with better certainty than comparators.**

Comparator organisations typically adopt a 'top-down' approach to setting efficiency targets, placing accountability on projects and programmes to contribute the same percentage saving. Comparators monitor and manage delivery of targets on a portfolio basis, balancing higher and lower outturn efficiencies from each project/programme to achieve the overall efficiency outcome, and use available risk funding as a contingency for any shortfall. The comparators' 'top-down' approach to setting efficiency targets does not require efficiency modelling. Efficiency 'stories' or case studies are developed for projects through the project authorisation process and forecast savings are declared against a standard set of efficiency themes.

Whilst National Highways employs a similar approach during a road period, it also benefits from its cost database to enable it to define a more robust pre-efficient cost baseline to underpin 'bottom-up' approach to efficiency quantification.

**No other organisation consulted used a 'bottom-up' method to forecast efficiencies at a project level. The norm appears to be a 'top-down' efficiency target that is set for the whole portfolio.**

The proposed 'bottom-up' estimating approach set out in this section provides a more explicit link between the type of projects and their status of development at the point the efficiency targets are set.

**Other organisations' 'top-down' efficiency targets are similar to the practical efficiency range proposed for National Highways.**

National Highways was established in 2015 and is now approaching the end of the third year in its second five year road period. Compared with some other infrastructure organisations National Highways has had less time to mature its capability to deliver its capital enhancement programmes, which is reflected in the lifecycle and status of the various initiatives it is investing in to improve its capability.

One organisation, which is preparing for its seventh control period as opposed to its third control period, has set a top-down efficiency target of 15% for both the current and next five-year control period.

Another organisation, which is also in its second control period like National Highways, has a top-down efficiency target of 10% for the current six-year control period. This was set on the basis that it achieved the same efficiency target in its first control period.

### 3.5 Conclusions

#### Scope for efficiencies – ‘bottom-up’ range forecasts

We have developed a ‘bottom-up’ efficiency range forecasting methodology for capital enhancement projects, documenting its basis, assumptions, risks and dependencies. The results of this assessment are summarised in Table 17.

Level	Practical efficiency range (at start of project lifecycle)	Applicable efficiency range			
		During Options	After Options	After Development	After Construction
<b>Project</b>	6 to 11	6 to 11	4 to 7	1	0
Programme	1 to 2	1 to 2	1	<1	0
Portfolio	2 to 3	2 to 3	1 to 2	<1	0
<b>Total</b>	<b>9 to 16</b>	<b>9 to 16</b>	<b>6 to 11</b>	<b>1 to 3</b>	<b>0</b>

Table 17: Summary of efficiency range estimates

The calculation is based on a ‘practical efficiency’ range that would apply to a new project across its lifecycle if committed in RP3 via RIS3, for which there is the maximum opportunity to apply the benefit of all capability levers. We conclude that the estimated practical efficiency range is 9 to 16%, with the extent of this range reflective of variations that could be expected across a broad range of individual major projects, and the inherent uncertainty in forecasting.

The assessment also incorporates an ‘applicable efficiency’ range that would apply to an existing project at each stage of its lifecycle, reducing from the practical range as the project progresses through options, development and construction phases. This is a key point in estimating potential RP3 efficiencies, which we advise should be explicitly based on a defined portfolio of major projects; i.e. not a generic top-down efficiency range. In extremis, for example, if no new major projects were committed in RIS3, then the upper range of applicable efficiency would not be relevant, leading to a much lower level of efficiency opportunity across the portfolio comprising existing committed schemes, that are in currently in development and construction, and that are expected to either be in construction or be complete by the start of RP3. We have set out a high-level hypothetical scenario to illustrate this key point, acknowledging that a clearer view on the RP3 major projects portfolio is expected to be set out in National Highways DSBP during 2023/24.



We conclude, therefore, that a key dependency that will affect the efficiency opportunity for major projects in RP3 is that a broadly stable and predictable pipeline of major projects is required, for both National Highways and its supply chain. The current pause to the SMP is a good example of the risk to realising future efficiencies if this is not possible.

Another key dependency for applying the proposed ranges estimates for RP3 efficiency, is that they will need to be based on a robust pre-efficient project cost baseline. i.e. our efficiency range forecast is not adjusted for or conflated with assumptions on the potential effect of funding levels, risks, headwinds and inefficiencies in RP3, all of which National Highways will also need to address in its DSBP alongside and analytically consistent with its efficiency plans.

We have been careful to document assumptions and the steps we have followed to assess capability plans and to build up the resultant efficiency range forecasts, as we envisage that ORR and National Highways may want to review these assumptions as part of their preparations for RIS3, as current risks and/or uncertainties are resolved, for example, funding for capability development.

#### **Scope for efficiencies – top-down assessment**

To complement and cross-check our bottom-up assessment of major projects efficiency, we considered a top down perspective based on efficiency targets and results for RP1 and efficiency targets for RP2. This top-down data indicates a broadly steady and constant trajectory of efficiency since the start of RP1 in the range of 8-9% per RP. This value represents an average efficiency aggregated across a large number of major projects which were/are at various stages of lifecycle maturity, and is broadly in line with our bottom-up range forecast, which comprises a practical efficiency range of 9 to 16% for projects at the start of their lifecycle, reducing to 0% by the end of their lifecycle.

We concluded that it is reasonable that this overall steady and constant trajectory of efficiency will continue in RP3 given the significant programme of capability/efficiency 'levers' now being developed and deployed, that will be progressively embedded in RP3 and, given their current maturity and time required to become BAU internally and in the supply chain, will continue to drive further efficiency opportunity in RP4. This trajectory is, as noted above, dependent on a robust and stable investment environment for major projects in RP3 and on delivery and embedment of the capabilities identifies.

#### **Scope for efficiencies – comparator assessment**

We also undertook a high-level comparison exercise on efficiency frameworks with other relevant organisations. The maximum 9% to 16% practical efficiency range at the start of a project's lifecycle (and reducing thereafter) defined above broadly aligns with their scale of efficiency targets, although we acknowledge that care is required in making high-level comparisons in different industry contexts, and that the comparator organisations' efficiency targets were set 'top down'.



## 4. Next steps

This review was commissioned to provide an independent assessment of capability and efficiency in commercial/procurement management and project/programme management for National Highways' major enhancement projects and, as a result, provide a resource for ORR and National Highways to help both organisations to discharge their responsibilities to the forthcoming RIS3 process. We recognise that, at the time of the review in late 2022, National Highways is developing its plans for RIS3, with a DSBP for this anticipated in 2023/24.

In the previous section 'Scope for efficiencies' it was highlighted that forecast of efficiencies that could be reasonably expected in RP3 will be fundamentally influenced by the composition of the major projects portfolio. Acknowledging this, we provided an analytical assessment of efficiencies, to assess potential efficiency ranges based directly on National Highways capability levels.

We suggest as a next step, to build confidence in the assessment, that it would be beneficial to test the application of and assumptions for efficiency range forecasts on a number of sample projects, including to:

- Model emerging details and scenarios for the major projects portfolio in RP3, and the estimated efficiency ranges that result.
- Pilot use of the assessment methodology as a potential resource for defining major project efficiencies for RP3.
- Undertake a baseline assessment of efficiency for RIS3 proposals within the DSBP.
- Assess the impact of changes of context or requirements for RIS3 that may alter assumptions and the range of potential efficiencies forecast.

## Appendix A – Abbreviations

Abbreviation	Definition
BAU	Business As Usual
BLD	Budget Led Design
C&P	Commercial & Procurement
CDF	Collaborative Delivery Framework
CI	Continuous Improvement
CIP	Complex Infrastructure Programme
CIPS	Chartered Institute of Procurement & Supply
DAP	Delivery Acceleration Programme
DbyD	Digital by Default
DCO	Development Consent Order
DEP	Delivering Efficient Projects
DfT	Department for Transport
DIP	Delivery Integration Partner
DSBP	Draft Strategic Business Plan
EIMM	Efficiency & Inflation Monitoring Manual
EV	Earned Value
FBC	Full Business Case

Abbreviation	Definition
GIRI	Getting It Right Initiative
IPMF	Integrated Project Management Framework
IR	Innovation Re-applied
KM	Knowledge Management
KPI	Key Performance Indicator
LTC	Lower Thames Crossing
MP	Major Projects
MPDT	Major Projects Delivery Transformation
OFT	Open For Traffic
ORR	Office of Rail and Road
P3M3	Portfolio, Programme, and Project Management Maturity Model
PACE	Project Acceleration in a Controlled Environment [in Network Rail]
PCF	Project Controls Framework
PPM	Programme and Project Management
OMR	Operations, Maintenance & Renewals
QM	Quality Management
RDP	Region Delivery Partnerships
RIP	Regional Investment Programme
RIS1	Road Investment Strategy 1
RIS2	Road Investment Strategy 2
RIS3	Road Investment Strategy 3
RIS4	Road Investment Strategy 4
RP1	Road Period 1 (2015-16 to 2019-20)
RP2	Road Period 2 (2020-21 to 2024-25)



Abbreviation	Definition
RP3	Road Period 3 (2025-26 to 2029-30)
RP4	Road Period 4 (2029-30 to 2034-35)
SMA	Smart Motorway Alliance
SMP	Smart Motorway Programme
SoS	Secretary of State [for Transport]
SOW	Start Of Works
SRN	Strategic Road Network

## Appendix B – Documents considered

Title	Organisation	Date
<b>Documents reviewed during Phases 2 and 3</b>		
Changing the industry FINAL	National Highways	September 2022
CRB productivity – performance analysis	National Highways	September 2022
Engagement Council 13th September DRAFT	National Highways	September 2022
National Highways' Productivity slides	National Highways	February 2022
CIPS Assessment report Highways England	National Highways	June 2022
CCF to CCFT 220722 v2	National Highways	July 2022
Government Commercial Continuous Improvement Assessment Framework Report	Government	2021
CIPS Advanced Procurement Excellence Brochure	CIPS	2017
CIPS Comms	National Highways	2022
Final CIPS Exec briefing 'National Highways CIPS Platinum Award Accreditation – What it means'	National Highways	2022
National Highways Corporate Service Benchmarking	PA Consulting	2021
National Highways Investment Decision Committee, Digital by Default, Approval of the Outline Business Case and 2021/22 Funding	National Highways	April 2021
'Changing the Roads Market (Objectives/Strategy/Targets flow diagram)	National Highways	Undated
Continuous Improvement strategy on a page	National Highways	Undated
SMP Vision and efficiencies – Engagement Council 13th September	National Highways	September 2022

Title	Organisation	Date
Highways England P3M3 Summary pack (003) - Project Programme and Portfolio Management Summary	ASPIRE	December 2021
Knowledge Management presentation	National Highways	August 2022
Major Projects Knowledge Management Strategy	National Highways	May 2020
P3M3 Initiative roadmap – CI	National Highways	March 2022
Major Project Delivery Transformation (MPDT) Handbook	National Highways	May 2022
Efficiency Delivery Plan 2020-2025	National Highways	January 2021
Delivery Acceleration Programme – Information for PPM Capability Assessment	National Highways	October 2022
Complex Infrastructure Programme: Sharing Lessons Learned	National Highways	October 2022
A14 Summary of Lessons Learnt 2020	National Highways	2020
A428 Black Cat to Caxton Gibbet improvements scheme – Lessons Learned with LTC	National Highways	2022
Major Projects Directorate Transformation Project Lifecycle Sprint Interventions (Tranche 1 & 2)	Highways England	May 2021
Highway England Smart Motorways Programme Alliance – Benchmark Review and Maturity Assessment	Highways England	February 2021
Investment Decisions Subject matter advisors’ guide to quality assurance reviews – Commercial	National Highways	Undated
MPDT – Lifecycle Workstream Stage 3 Overview	National Highways	May/June 2022
Major Projects Delivery Transformation – Briefing for Exec Director for Major Projects on current MPDT efficiency projection	National Highways	September 2022
MPDT – Stage 2 Frameworks and Preliminary Design 17 12 2021	National Highways	December 2021
Integrated Project Management Framework (IPMF) Technical Focus Group	National Highways	June 2022
NH Integrated Project Management Framework (IPMF) Stage 3 – Close-Out	National Highways	September 2022
Presentation of: ‘Value Chain, NH Transformation scope, outcomes and integrated plan’, ‘NH Transformation Governance and Reporting’ and ‘Sample success stories’	National Highways	2022
Quality Assessment Executive Summary Final	Accenture	October 2021
TUBE Reports (Average Cost/Stage Breakdown)	National Highways	Undated

Title	Organisation	Date
IPMF Benefits Breakdown 28 02 2022	National Highways	February 2022
Digital by Default – IDC Paper and 2021-22 Funding	National Highways	April 2021
Changing the industry – final	National Highways	Undated
RIS 1 Productivity performance	National Highways	February 2022
How the SMP Alliance enterprise model delivers efficiency while transforming delivery (Engagement Council)	National Highways	September 2022
BRP2 Initiatives Overview	National Highways	November 2022
PR1304 Full Business Case Cost Estimating Software FINAL 17.12.20	National Highways	December 2020
221014_MPLT_RIS2 Update Transformation WS v2 (002)	National Highways	October 2022
<b>Documents reviewed during Phase 1 desk study</b>		
Review of Highways England's capability to plan and deliver its RIS2 enhancement capital programme	The Nichols Group	March 2021
Preparing for RIS3 Enhancements Cost and Efficiency Review Task 1 Summary Report	The Nichols Group	February 2022
Preparing for RIS3 Enhancements Cost and Efficiency Review Task 1 Detailed Report	The Nichols Group	February 2022
Preparing for RIS3 Enhancements Delivery Timescales and Risks Review – Task 2 Summary Report	The Nichols Group	February 2022
Highways England Procurement Capability Review	Rowsell Wright	December 2017
Review of Highways England's supply chain management framework in readiness for RIS2 – Exec Summary	CEPA	March 2020
Final report – Longer-term implications of Highways England's road period 2 delivery Routes to Market review	Elliott Hyperion	March 2021
Interim Findings – Longer-term implications of Highways England's road period 2 delivery Routes to Market review	Elliott Hyperion	December 2020
Project 13 Case study Developing a strategic roadmap	Highways England	June 2018
Routes to Market Smart Motorways Alliance – Supplier Engagement Outputs Report	Highways England	August 2018
Routes to Market Post-event Brief	Highways England	May 2017
Efficiency and Inflation Monitoring Manual	Highways England	July 2020



Title	Organisation	Date
Review of Highways England's Portfolio and Programme management capability	CITI	October 2017
Efficiency Report Year 2 – 2021-22	National Highways	2022
Highways England Efficiency Report	Highways England	July 2021
Transport Infrastructure Efficiency Taskforce Briefing on the TIES Cost Planning & Estimating Capability & Maturity Assessment	ARCADIS	October 2018
Draft Strategic Business Plan Section C – Efficiency	Highways England	January 2019
Smart Motorways Alliance Full Business Case	Highways England	October 2019
Routes to Market Regional Delivery Partnerships – Full Business Case	Highways England	September 2018
Major Projects Delivery Transformation Programme and Workstream Summary	Highways England	May 2020
Major Projects Delivery Transformation Communications Resource Pack	Highways England	November 2020
Contract Management Manual – Version 8	Highways England	January 2020
Contract Management Principles – Version 1	Highways England	April 2018
Cost Management Manual – Version 1 of 2	Highways England	June 2019
Delivering Efficient Projects	National Highways	Undated
Cost Management Principles Version 1	Highways England	April 2018
P3M3 Highways England Project Report v5	ASPIRE	Nov 2018
Highways England SMP P3M3 2018 Programme level report v2	ASPIRE	2018
Highways England RIP P3M3 2018 Programme level report v2	ASPIRE	2018
Highways England Major Projects Programme Hub P3M3 2018 Survey Comparison Report v2	ASPIRE	2018
Highways England Complex Infrastructure Programme P3M3 2018 Survey Comparison report v2	ASPIRE	2018
ORR Review of Opportunities from Highways England's Innovation and Standards Management Report	Elliott Hyperion	June 2019
ORR Review of Highways England's Ability to Improve Efficiency from its Asset Management Capability	AMCL	January 2018
ORR Review of HE Efficiency Measurement Framework	REBEL	April 2020



Title	Organisation	Date
Strategic Business Plan 2020-2025	Highways England	2020
Procurement Strategic Improvement Activities – CCF and the progression to CCFT (future systems)	National Highways	July 2022
CIPS Comms – Commercial and Procurement achieves world-class recognition	National Highways	2022
National Highways Corporate Services Benchmarking	PA Consulting	2021
CIPS Excellence in Procurement Awards 2022 – ‘National Highways have been shortlisted in the Public Procurement Project of the Year category for the entry Scheme Delivery Framework (SDF)’	CIPS	June 2022
Final CIPS Exec briefing – National Highways CIPS Platinum Accreditation – What it means	National Highways	2022
A14 Option 7B – Form 300 Signed	Highways England	January 2014
M25 J28 Option 5F dSBP Form 300 Stage 2 v1.0	Highways England	Updated
M42 J6 Approved Estimate F300 Signed	Highways England	February 2017
RP2 Capital Portfolio Investment Report Q4 2021-22	National Highways	June 2022
The Project Control Framework Handbook version 4	Highways England	November 2018
New RIS3 Efficiency Levers	National Highways	August 2022
Establishing an appropriate efficiency challenge – Prepared for Wales & West Utilities Limited	OXERA	November 2019
Innovation Re-applied Workstream Remit	National Highways	October 2019
NH 5-year-delivery-plan-2020-2025-final	National Highways	2020
CEPA ris2-efficiency-and-deliverability-review	CEPA	June 2019
Delivery-plan-update-2021-22_final-web-version-1	National Highways	2022