



# **National Highways**

## **2030 Water Quality Plan**

### **Mitigating high risk outfalls and soakaways**

Date: August 2023

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## Executive summary

Road runoff can carry pollutants which under certain conditions can have a negative environmental impact.

National Highways is responsible for around 3% of England's roads. We are the government owned company that operates, maintains and improves the 4,500 miles of England's motorways and major A roads, known as the Strategic Road Network (SRN). We recognise the importance of doing this in a way that protects, restores and enhances the environment. This report sets out National Highways' (NH) plans for how it will address potential pollution to the water environment, arising from the historic development of the SRN, from its highest risk outfalls and soakaways.

There are 1,236 outfalls & soakaways identified by NH as having a potential high risk of pollution. Of these, 145 have a verified high risk of pollution and therefore require mitigation whilst the remaining 1,091 are unverified and have been identified as having a '*potential*' high risk of polluting the water environment.

Based on experience to date that c10% of verifications result in confirmation of high risk it has been assumed, for planning purposes and to inform the ongoing Road Investment Strategy 3 (RIS 3 2025-2030) funding negotiations, that c109 additional locations will be confirmed once unverified locations have been assessed. Taken together, with the existing register of 145 verified locations, this gives an overall total of approximately 254 outfalls/soakaways requiring capital interventions by 2030 to address our current understanding of high risk assets on the SRN. These assumptions have been used to inform funding requirements for RIS3.

This document sets out a high-level programme of work that achieves the plan to mitigate all high risk outfalls by 2030.

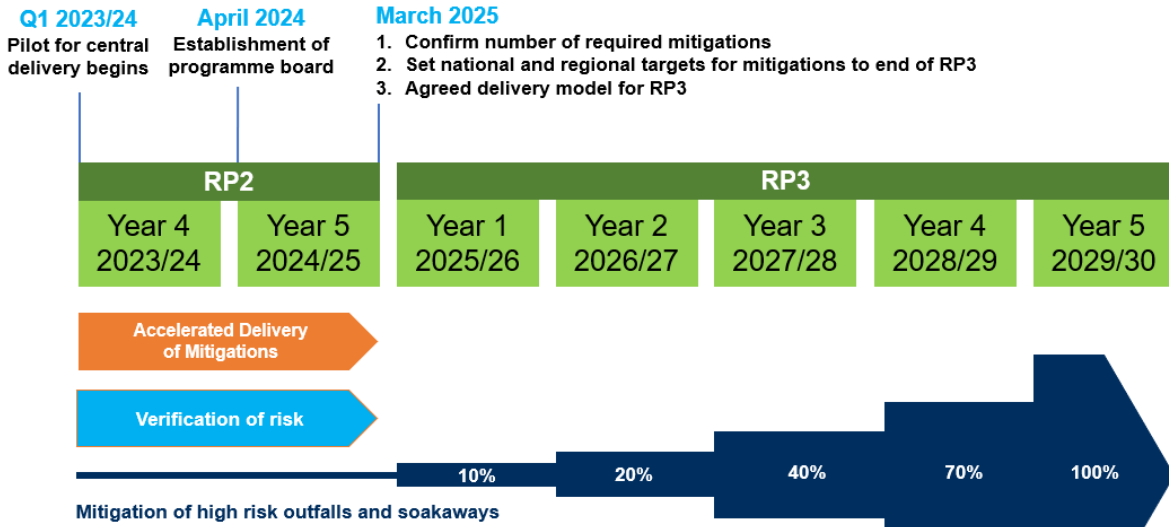
Our focus in the remaining period of Road Period 2 (2020-2025) is to:

- verify the potential high risk status for all unverified high risk locations
- maximise delivery opportunities for mitigation of confirmed high risk locations
- confirm a baseline and target level of delivery for the next Road Period 3 - (RP3 2025 - 2030)
- put in place programme management and delivery arrangements to do this.

Delivery in RP3 will be subject to funding being agreed through RIS3. Targeted activities are set out for how NH will prioritise activity in the remaining years of RP2 (2023-2025) and which are achievable within current funding levels. A summary of the proposed timeline and key milestone dates of activities set out within this is report is presented below.

# 2030 Water Quality Plan

Progress Reported Annually



# 1 Introduction

## 1.1 Background

The Strategic Road Network (SRN) comprises of over 4,500 miles of motorway and major A-roads, representing around 3% of the total road length across England. National Highways (NH) is the government-owned company responsible for operating, maintaining and improving the SRN. Whilst this is a relatively small proportion of the overall road network it is the busiest; carrying two-thirds of all freight and a third of all traffic. National Highways has a statutory duty to ensure that discharges from its network into the receiving water environment do not cause pollution.

Road runoff can carry pollutants which, under certain conditions, can have a negative environmental impact. National Highways works closely with the Environment Agency to understand the risk of pollution from highway discharges, and the potential scale of the impact as it may relate to the management of the SRN, in order that we can manage these risks effectively. Our policy and standards in this area are set out in the Design Manual for Roads and Bridges (DMRB) LA113: Road Drainage and the Water Environment. We have robust assessment tools for determining water quality impacts of road runoff from the SRN based on extensive research which was, in part, funded by the Environment Agency. The pollutants of concern and associated thresholds which were agreed with the Environment Agency, and adopted by us in the DMRB in 2009, help us to determine if the pollution risk from highway runoff is acceptable or unacceptable, and inform the nature of any mitigation required. All road schemes designed and built since 2009 on the SRN therefore have been subject to robust assessments and, where necessary, include mitigation measures for known pollution risks.

National Highways continues to develop its knowledge and understanding of the chemical footprint and potential impact of road runoff on the receiving water environment. In recent years, and in response to current national and global concerns in relation to the environmental impact of microplastics, National Highways has undertaken further research to understand the potential sources of microplastics from highways and to try to understand the scale of the problem. This work has been done in partnership with the Environment Agency<sup>1</sup>. Phase 1 was completed in 2021 before advancing to phase 2 which was a field monitoring programme. In addition to monitoring for microplastics, and following agreement with the Environment Agency, NH has also monitored its road runoff to establish the presence, absence and potential environmental significance of an extended suite of contaminants not previously investigated. The findings will be used by NH to continue to review and refine existing practices and inform the need for further research.

National Highways recognises that the SRN has been developed over 60 years to road design standards that, whilst considered best practice at the time, may not be deemed appropriate by today's standards. Where there are improvement projects which are upgrades of the existing network, the application of our assessment process is designed to drive an improvement in the quality of runoff and/or reduction in impacts on receiving waterbodies. In addition to this National Highways has an ongoing programme of work to

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<sup>1</sup> Investigation of 'microplastics' from brake and tyre wear in road runoff - Final Project Report, Atkins-Jacobs, September 2020. Available at <https://s3.eu-west-2.amazonaws.com/assets.highwaysengland.co.uk/Knowledge+Compendium/Investigation+of+microplastics+from+brake+and+tyre+wear+in+road+runoff.pdf>

record its asset inventory across its entire network and to identify and mitigate 'legacy' locations identified and confirmed as posing a potential pollution risk.

National Highways is committed to minimising the impact of the SRN upon the quality of our water environment. This document specifically sets out how NH will address the highest pollution risks across the SRN resulting from historic design practices and the development of the SRN<sup>2</sup>. It also sets out a timetable for doing this. It should be noted that any identified programme, and associated delivery in Road Period 3 (RP3 2025-2030), is subject to the level of funding agreed as part of the ongoing Road Investment Strategy 3 (RIS 3) negotiations. RIS 3 will set out the available funding, and plans, for how money will be invested in the SRN in the next road planning period. The high-level water quality plan set out in this document will be reviewed and updated on confirmation of the RIS 3 funding settlement.

## 1.2 National Highways Environmental Sustainability Strategy

National Highways' Environmental Sustainability Strategy (2023) re-iterates our commitment to improving the water environment. Within the strategy there is a commitment to mitigate pollution arising from our outfalls and more specifically to identify opportunities to address our highest risk outfalls and soakaways, and to implement a programme of improvements to mitigate them in RP3 (2025-2030).

Our strategy seeks to deliver solutions that achieve multiple benefits across a range of environmental objectives and one specific ambition is to make nature-based solutions our first choice of environmental improvement where possible thereby delivering benefits to nature, communities and reducing carbon.

## 1.3 Current baseline

At present there are 1,236 high risk outfalls and soakaways recorded on the NH network. A breakdown of the total number of assets and their risk status is given in Annex A.

The number of outfalls and soakaways and their distribution in terms of risk category and verification status was previously compiled in 2021. Broadly, the numbers and distribution are the same now (May 2023) as they were in 2021 although the following factors have caused some changes:

- 3,225 outfalls and soakaways which, in 2021, had a risk category of 'Not Determined' have now undergone a baseline assessment to assign each with a risk category. 11% of these were categorised high risk, thereby *increasing* that total - although these assets will require verification which is a site-specific environmental assessment to confirm predicted risk.
- Ongoing verification of assets on an asset-specific basis has, as expected, *reduced* the number of assets categorised as high risk as the initial baseline assessment is deliberately conservative.

Despite the changes in the exact numbers, they remain broadly the same as those reported in 2021.

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<sup>2</sup> High risk outfalls and soakaways are those verified as Category A or B. Category definitions are given in DMRB CD535.

### 1.3.1 Remaining uncertainties in the data

National Highways' Drainage Data Management System (DDMS) record of existing outfalls and soakaways is not fully populated. The number of outfalls and soakaways recorded on DDMS may continue to grow as existing assets are recorded on the system when located through surveys. Some of these existing assets may be high risk but the quantum is unknown. Our plan is that any such newly identified outfalls or soakaways are recorded and form the basis of any forward programme of activities post 2030.

### 1.3.2 2030 Water Quality Plan – Planning Assumptions

Table 1 identifies the current understanding of high risk outfalls and soakaways on the SRN and those which have been verified i.e. confirmed through a site assessment to pose a pollution risk.

The objective is to address the risk from all high risk outfalls and soakaways as identified in March 2023 and summarised in Table 1 by the end of RP3 (March 2030). Any newly identified outfalls/soakaways not previously known of and added to DDMS post 2023 will be incorporated into future planning activities for the Road Investment Strategy 4 (2030-2035) unless managed through change control in RP3.

Through site specific assessment undertaken to date, 145 of these assets have been verified as presenting a high risk of pollution and therefore require mitigation.

The remaining 1,091 high risk assets require verification before their risk status, and need for any mitigation, can be confirmed.

**Table 1 Current Outfalls/Soakaways with High Risk Status**

<b>Verified (mitigation required)</b>	145
<b>Unverified</b>	1,091
<b>Total</b>	1,236

Experience has shown that approximately 10% of unverified high risk assets are confirmed as high risk once the verification process has been undertaken. This is due to the precautionary approach adopted with the baseline risk assessment. For the current register of unverified assets this would represent approximately 109 additional high risk sites requiring mitigation.

Verification of an asset requires a bespoke environmental assessment of the asset location to determine the risk status<sup>3</sup>.

Based on the above assumptions, Table 2 shows this would give a potential total of 254 assets which could require physical intervention to mitigate the risk of pollution. These planning assumptions have been used to inform future funding needs up to 2030.

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<sup>3</sup> For outfalls, verification uses a 'HEWRAT assessment' (HE-Water Risk Assessment Tool). For soakaways, verification uses the Priority Soakaways Worksheet (PSW). Both tools are available on the HADDMS downloads page ([www.haddms.com](http://www.haddms.com)). Further detail on the verification process is given in the following documents: DMRB CD535 (refer to England National Application Annex), Priority Outfalls User Guide (available on HADDMS downloads page); and Priority Soakaway User Guide (available on HADDMS downloads page).

**Table 2 Forecast Outfalls/Soakaways requiring mitigation**

<b>Verified high risk</b>	145
<b>Predicted high risk post-verification</b>	109
<b>Total (mitigation required)</b>	<b>254</b>

Where possible National Highways will seek to prioritise the use of nature-based solutions such as sustainable drainage systems (SuDS) as the preferred environmental improvement.

## **2 Delivery Mechanisms Road Period 2 (RP2, 2020-2025)**

### **2.1 Funding**

Funding of outfall and soakaway mitigations throughout RP2 is provided through the following mechanisms:

1. Major Projects – funding of mitigations for high risk assets within the red line boundary of a scheme is met through core project funding and National Highways’ ring fenced Environment and Wellbeing Designated Funds; and
2. Operations – funding of mitigations for high risk assets on the wider network is bid for through National Highways’ ring-fenced Environment and Wellbeing Designated Funds.

### **2.2 Major Projects (MP)**

Where existing high risk outfalls and soakaways lie within the boundary of a planned Major Project scheme, the most cost-effective means of mitigating the assets is to undertake the design and construction as part of the scheme.

Through the Major Project schemes which are programmed for completion in the remainder of RP2 (ending March 2025), 10 high risk outfalls and soakaways are forecast to be mitigated. These are listed in Annex B.

A spreadsheet-based tool has been established to track progress for each of the Major Project schemes listed in Annex B. The tracker is reviewed monthly in a meeting between MP and SES (Safety, Engineering and Standards).

Delay in the MP programme for any of the schemes listed in Annex B will have a subsequent impact on the programme of assets which can be delivered in the remaining years of RP2 and, if the project is ongoing, will therefore roll over into RP3 (2025-2030). If a project is cancelled or delayed for an extended period, then the burden of responsibility for mitigating the high risk asset will pass to the relevant regional operations team.

#### **2.2.1 Improving delivery in remainder of RP2**

To accelerate delivery a new operating model providing central delivery of verification and mitigation of assets is being established and piloted. This will commence in Q1 2023/24. If successful, then it will be rolled out more widely within our Major Projects Directorate.

### **2.3 Operations Directorate (OD)**

Where high risk outfalls and soakaways lie outside the boundary of a MP scheme, mitigation is delivered by OD through the Environment and Wellbeing Designated Fund as an environmental improvement.



### 2.3.1 Improving delivery in remainder of RP2

4 outfalls have confirmed funding and committed delivery in 23/24. A further 17 outfalls/soakaways have been identified for potential delivery in 24/25. NH will do what it can to prioritise funding to support delivery of these subject to completion of technical feasibility, design and confirmation of delivery in 24/25. These are listed in Annex C and are subject to regular review with OD on a monthly basis.

A number of additional activities have been identified and agreed for delivery by the end of RP2. These will allow robust identification of a baseline target of mitigations for delivery in RP3. The activities are:

1. Verification of all assets with high risk baseline status. Target of at least 10% by March 2024, 100% by March 2025
2. Accelerated delivery of newly identified mitigation opportunities of verified high risk assets - identification of opportunities for delivery in addition to those currently programmed and identified in Annex C.

By the end of RP2 National Highways will confirm its baseline understanding of high risk assets. This will be used to identify delivery targets in RP3 and inform development of a delivery programme. The assumptions set out here have been used to inform RP3 funding discussions.

## 3 Delivery in Road Period 3 (RP3, 2025-2030)

### 3.1 Major Projects & Operations Delivery Programme

It is not possible to detail the level of delivery by Major Projects and Operations at this time for RP3. A detailed delivery programme will be informed by the RIS 3 funding settlement when published.

## 4 Governance, Programme Management, Monitoring and Reporting

National Highways has a number of performance indicators on environmental performance, including one on water quality which is:

*“The length (km) of watercourse enhanced through the mitigation of medium, high, and very high risk outfalls as well as through other enhancements such as river retraining/rewilding”.*

The purpose of the metric is to monitor how National Highways is improving the water environment by reducing adverse effects on waterbodies. Mitigation of outfalls contributes directly to this metric. This is the length of waterbody taken from the point of discharge to the next recognisable confluence downstream. Each mitigation and contribution to the metric has to be technically assured and confirmed by in-house specialists through a defined governance process. It is expected that the current water quality Performance Indicator will continue to be applied in RIS 3 and that it can easily be adapted to report progress against this specific objective.

National Highways reports annually to the Office of Rail and Road (ORR) on progress against all of its environmental performance indicators. National Highways has committed to reporting annually on progress against the implementation of its Environment Sustainability Strategy. We will continue to liaise quarterly with the Environment Agency, via our Memorandum of Understanding (MoU), providing regular updates and seeking technical input on the development of the programme as required.

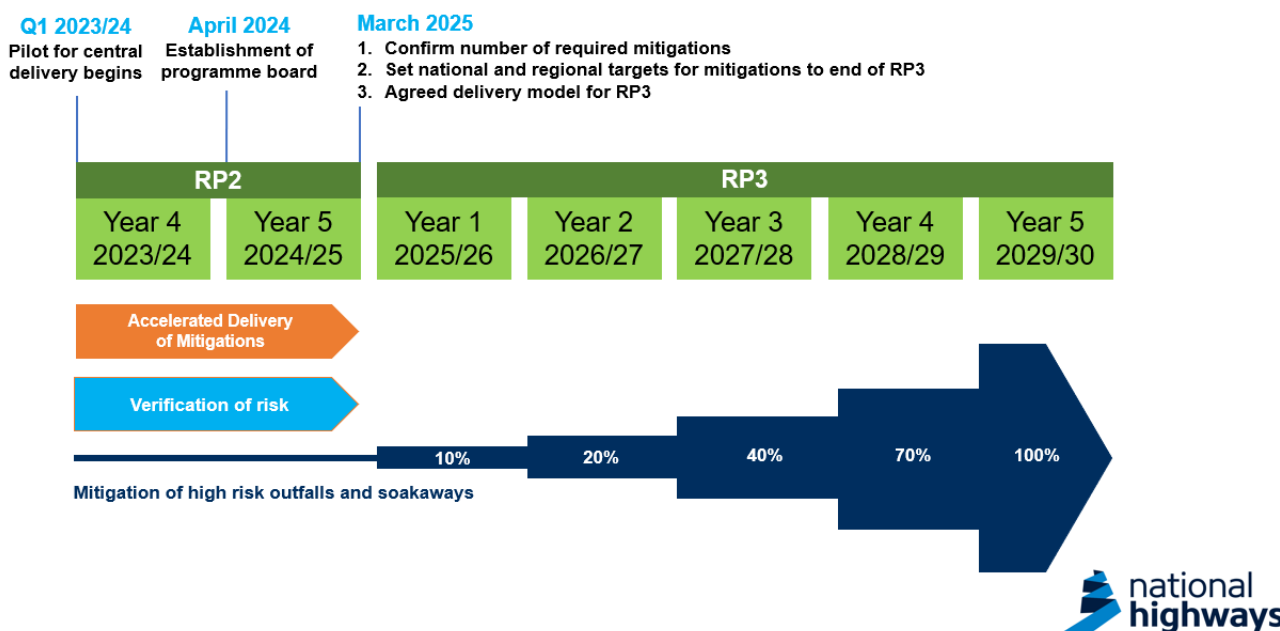
National Highways will build upon existing technical guidance and governance practices and put in place a more refined programmatic approach to delivery by 2025. This will be key to managing the necessary upscaling of delivery across the business to meet our 2030 goals. This will involve the following key deliverables and milestones:

1. From 2023/24 we will make information more publicly available and report annually on progress.
2. By the end of 2023/24 we will establish a Programme Board responsible for monthly review of progress and overall delivery up to 2030.
3. By the end of 2024/25 we will have identified and undertaken a prioritisation process to define our annual delivery targets and programme of activities to 2030.
4. By the end of 2024/25 we will have an agreed delivery model for RP3 including approach to procurement.

The timeline for the 2030 water quality plan is shown below.

## 2030 Water Quality Plan

Progress Reported Annually



## 5 Risks

The key risks to achieving the 2030 water quality plan include:

- Road Investment Strategy 3 (2025-2030) funding settlement for NH
- MP Schemes are not progressed or have very extended programmes;
- reporting and auditing of mitigations; and
- supply chain capacity.

These risks and others are considered in more detail in Annex D, together with control measures and planned management activities.

## Annex A - Number of outfalls and soakaways recorded on the NH network

### National Highways Outfalls and Soakaways March 2023

<b>Asset Type</b>	<b>High Risk</b>	<b>Medium &amp; Low Risk</b>	<b>Risk Addressed</b>	<b>Total Number</b>
<b>Outfalls</b>	1,054	14,301	2,728	18,083
<b>Soakaways</b>	182	6,113	1,380	7,675
<b>All</b>	<b>1,236</b>	<b>20,414</b>	<b>4,108</b>	<b>25,758</b>

## Annex B - Major Project schemes remaining in RP2

### Major Project schemes remaining in RP2 and expected asset mitigations

Date	Scheme	Number of high risk outfalls and soakaways expected to be mitigated*
RP2 Year 4	A585 Windy Harbour Skippool	2
	A19 Norton to Wynyard	2
	A30 Chiverton to Carland Cross	5
RP2 Year 5	M2 Junction 5	1
<b>Total</b>		<b>10</b>

*\*The numbers in this table are subject to change depending on confirmation during the planning stage for each scheme. Currently they represent 10% of the number of outfalls and soakaways within the footprint of the scheme. Progress is tracked and reviewed quarterly via the Contractor Performance Water Quality Metric.*

## Annex C - OD outfalls/soakaways for mitigation in years 4 and 5 of RP2

### Operations Directorate asset mitigations in year 4 of RP2

Date	Scheme	High risk assets to be mitigated*
RP2 Year 23/2	A20 Pinks Hill BP (A5-290)	1
	A27 Joint Scheme Wild Park Rainscape	2
	A595 Moresby Hall	1
<b>Total</b>		<b>4</b>

\*The projects in this table have confirmed funding and commitments to delivery in 23/24

### Operations Directorate Delivery Opportunities for year 5 of RP2

Date	Scheme	High risk assets to be mitigated*
RP2 Year 5	A14 Outfalls (Grand Union Canal)	1
	M1 Gillmorton Outfall	1
	M1 Ashby Magna Outfall	1
	A550 Blackboards Lane	1
	M62 Gildersome	4
	EA Priority sites Spen Beck	3
	M6 Lancaster Canal	5
	A1 Foston	1
<b>Total</b>		<b>17</b>

\*NH will do what it can to prioritise funding for projects identified in this table subject to completion of technical feasibility design and confirmation of delivery in RP 2. This will be reviewed with OD and updated on a monthly basis.

## Annex D – Risks and Control Measures

Risk description	Inherent exposure	Existing control measures	Residual exposure	Risk Appetite	Future planned risk management activities
Target objective is fixed, and insufficient funding is available in Road Investment Strategy 3 (RIS 3 2025-2030) to deliver the objective	High	Cost analysis undertaken and budget identified to deliver verification and delivery of target objective as part of RIS 3 planning and funding bid	High	Low	There is current uncertainty regarding RIS 3 funding, and this will be a main focus within the RIS 3 funding negotiations with Department for Transport ( DfT) & Treasury
10% verification assumption is incorrect resulting in a higher number of locations requiring mitigation	Medium	<p>Monthly review of Verification status on Drainage Data Management Systems (DDMS) tracks conversion rate</p> <p>Fortnightly review of verification progress with Operations and Major Projects confirms rate of conversion.</p> <p>Cost analysis work for RIS 3 to include a range of % verification around the 10% assumption</p>	Low	Low	<p>Previous field study investigations have indicated the current method as precautionary. It is possible that &lt;10% will be verified as high risk resulting in fewer mitigations required in Road Period 3. To strengthen our quality assurance practices we will:</p> <ul style="list-style-type: none"> <li>• Target training of suppliers</li> <li>• Spot check audit/assurance of regional verification practices</li> <li>• Undertake regular review of verification conversion rate</li> </ul>
<p>Major Project schemes are removed from the programme or given extended timescales.</p> <p>Mitigation of outfalls and soakaways within the footprint of these schemes will have to be delivered by Operations instead increasing burden.</p> <p>There is a risk of insufficient funding and capacity to deliver these 'additional' locations.</p>	High	<p>Monthly review of the status of the Major Projects' programme (monthly meeting between Safety Environment Standards and Major Projects directorates)</p> <p>Development of central delivery model within Major Projects offers opportunities to address locations not taken forward by some Major Project schemes</p>	Low	Low	<p>Not all schemes will be able to deliver their high risk assets. This will leave the burden of additional delivery to Operations.</p> <p>Therefore, we will review the programme on confirmation of the RIS 3 settlement and proposed programme of improvements.</p>

Risk description	Inherent exposure	Existing control measures	Residual exposure	Risk Appetite	Future planned risk management activities
Reporting practices and audit procedures fail to demonstrate assets have been mitigated	High	<p>Training and awareness sessions with project teams and operational regions</p> <p>Regular performance reviews with Major Projects and Operations PMOs (Programme Management Office)</p> <p>Establishment of a Programme Management Board</p>	Low	Low	<p>Our records are incomplete. Therefore, we will:</p> <ul style="list-style-type: none"> <li>• Target project training for in-year deliverables</li> <li>• Set in-year targets for Major Projects and Operations and implement milestone delivery reporting</li> </ul>
Supply chain capacity, failure of supply chain to meet increased demand	High	<p>Early commitment published in the National Highways Environment Sustainability Strategy giving visibility of ambition</p> <p>Progressive targets for remainder of Road Period 2 (2020 – 2025) to increase awareness, identify targets for RP3 and build capacity</p> <p>Regular performance reviews with Major Projects/Operations PMOs &amp; establishment of a Programme Management Board</p> <p>Dedicated technical working group with Operations drainage engineers to rationalise and ensure consistency of business processes</p>	Medium	Low	<p>There is inadequate pace of delivery to meet 2030 water quality plan. Therefore, we will:</p> <ul style="list-style-type: none"> <li>• Explore the potential for a rapid engineering model (off the shelf designs which can be deployed)</li> <li>• Engage further with Environment Agency regarding treatment options and approach to betterment</li> </ul>

Risk description	Inherent exposure	Existing control measures	Residual exposure	Risk Appetite	Future planned risk management activities
<p>Insufficient in-house resource, capability and capacity will impact on reporting and delivery.</p>	<p>High</p>	<p>Training and awareness sessions with project teams and operational regions</p> <p>Regular performance reviews with Major Projects/Operations PMOs &amp; establishment of a Programme Management Board</p> <p>Regular Contractor Performance Framework (CPF) water Quality Metric training</p> <p>Additional water specialist technical support provided</p> <p>Specialist Technical Consultancy support available for 2023/24</p> <p>Designated Funds available to support procurement of specialist technical services for Operations and Major Projects</p> <p>RP2 targets identified for Operations in years 4 &amp; 5</p>	<p>Medium</p>	<p>Low</p>	<p>Programme development and feasibility work completed and/or reported is deemed inadequate. Therefore, we will:</p> <ul style="list-style-type: none"> <li>• Provide further training for CPF Water Quality Metric</li> <li>• Provide technical support</li> <li>• In-house training to improve delivery directorate's capability</li> <li>• Develop detailed implementation plan in 2023/24 to meet new Environment Sustainability Commitment</li> </ul>



Risk description	Inherent exposure	Existing control measures	Residual exposure	Risk Appetite	Future planned risk management activities
<p>Outfall/soakaway mitigation schemes being slow to progress and/or unviable due to engineering constraints, land availability or poor value for money</p>	High	<p>In-house specialist technical support and guidance</p> <p>Regular review and liaison with Environment Agency</p>	Medium	Low	<p>Pace of delivery to meet 2030 water quality plan is inadequate. Therefore, we will:</p> <ul style="list-style-type: none"> <li>• Explore potential for a rapid engineering model (off the shelf designs which can be deployed easily)</li> <li>• Seek clarification with Environment Agency on technical response to 'difficult to remedy' sites and betterment.</li> <li>• Complete technical review and updated guidance on mitigation hierarchy for high risk locations and related value-for-money guidance</li> </ul>
<p>Increased reputational risk to NH from adverse media commentary on approach to address high risk pollution locations</p>	High	<p>Development of Water Quality Plan 2030</p> <p>Annual reporting against company water Performance Indicator of improvements made</p>	Medium	Low	<p>Publication of Water Quality Plan on NH website</p> <p>Development of communications plan for forward programme of activities</p>